

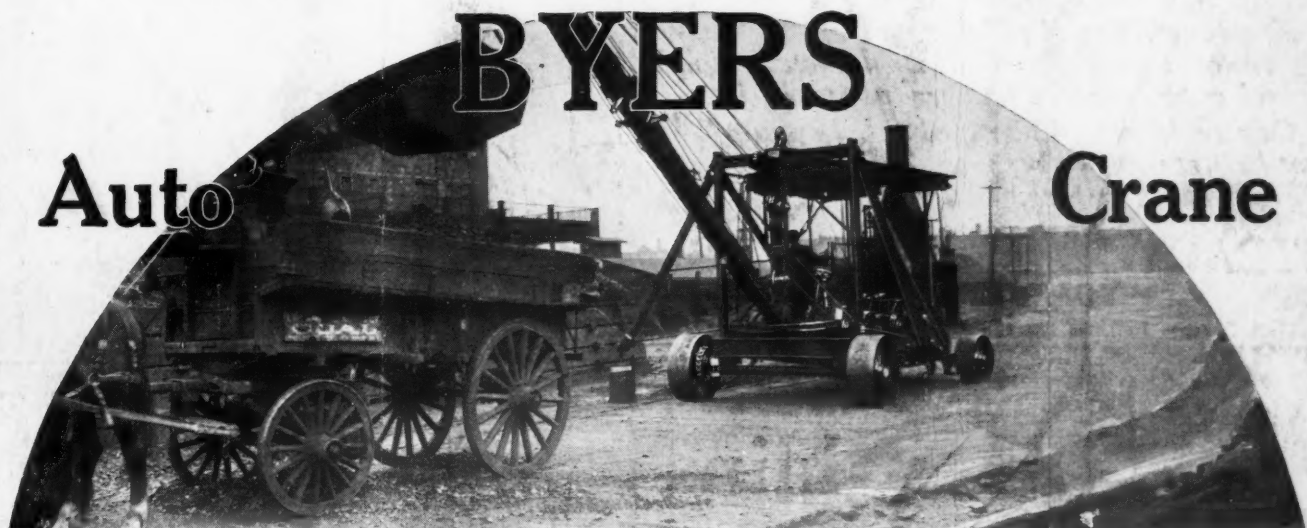
MAY 27 1918

# Rock Products

\$2.00 A YEAR

CHICAGO

MAY 22, 1918



You name the work and we'll show you an Auto-Crane doing similar work. It's time you quit worrying over labor troubles and put a real **GIANT LABORER** on the job.

## Byers Auto-Cranes

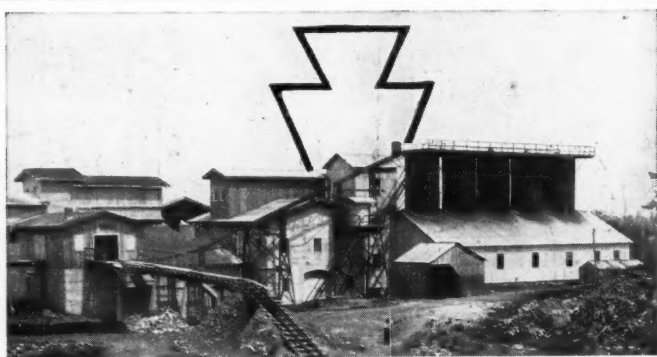
are filling a long-sought-for want in many fields, being used in connection with clam-shell or orange-peel buckets, hook, skip and magnet work with equal satisfaction and success.

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## O'Laughlin Screens

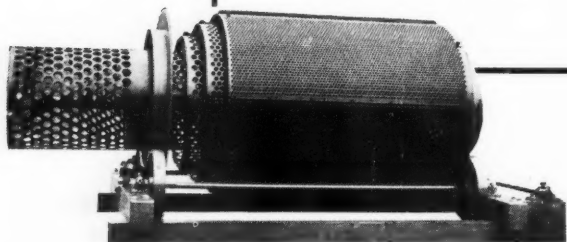
Do you know that the heads at the end of the inner screen cylinder are fitted with removable steel tires which can be replaced after several years' wear at small cost? And that the two heads revolve on four special steel-faced trunnions, of carwheel specification, which last for many years?

These are two of the long-wear features which have reduced screen cost for crushed stone, sand and gravel producers. And they are smooth running!

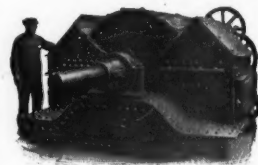
A Waukesha, Wisconsin, user says: "We have been using O'Laughlin Screens for over five years and must say that they are very economical in regard to repairs and power consumption."

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*Stationary and Portable*

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# Rock Products

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CHICAGO

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Advertising

## SUBSCRIPTION

\$2 a year in United States; \$3 a year, Canada and foreign. Single copies, 20 cents. Date on wrappers indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

Entered as second class matter July 2, 1907, at the Postoffice at Chicago, under act of March 3, 1879.



PUBLISHED  
EVERY OTHER  
WEDNESDAY

by the TradePress Publishing Corporation, 538 South Clark St., Chicago, Ill., U. S. A. W. D. Callender, president; T. J. Sullivan, vice-president; George P. Miller, treasurer.

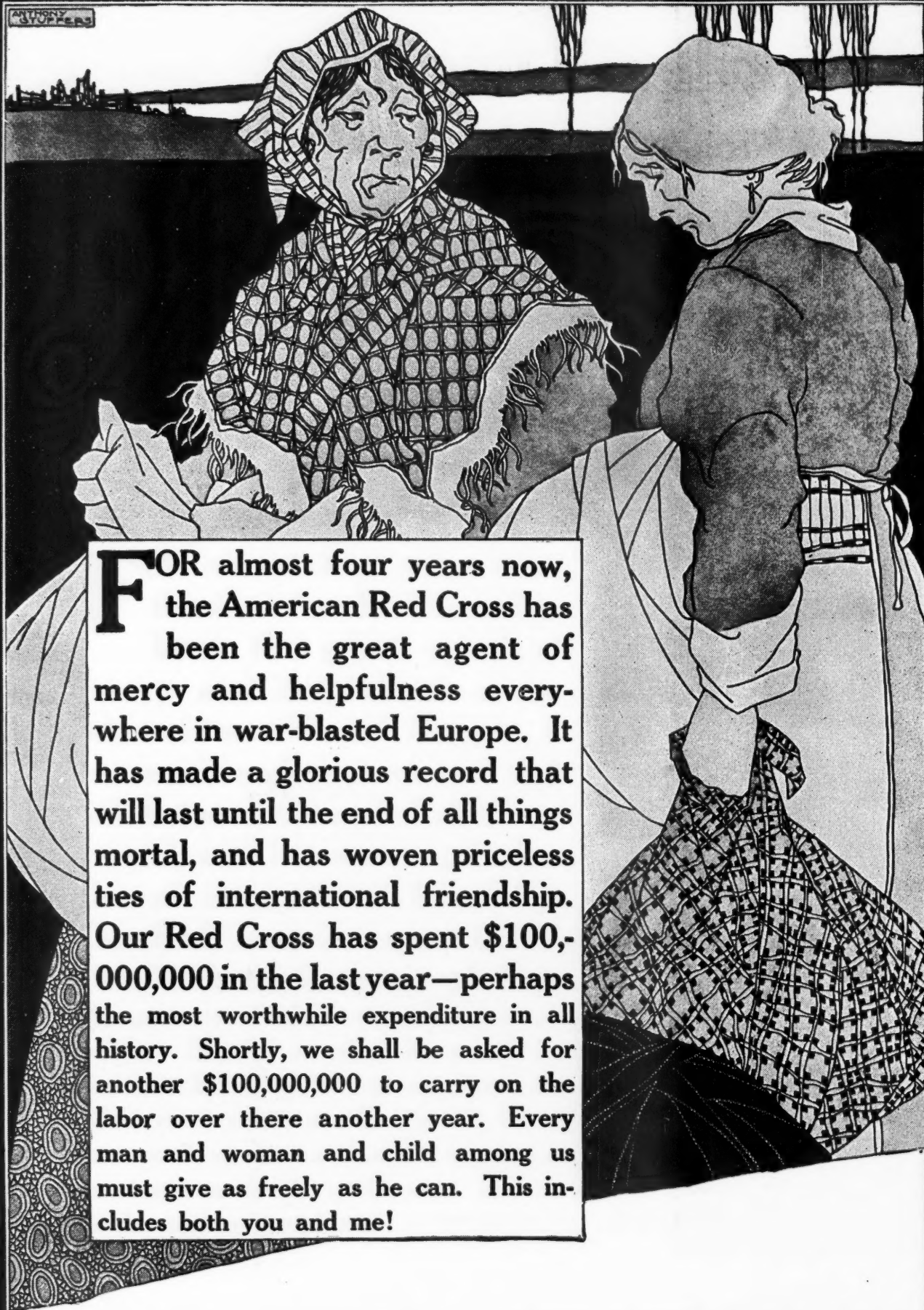
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**F**OR almost four years now, the American Red Cross has been the great agent of mercy and helpfulness everywhere in war-blasted Europe. It has made a glorious record that will last until the end of all things mortal, and has woven priceless ties of international friendship. Our Red Cross has spent \$100,000,000 in the last year—perhaps the most worthwhile expenditure in all history. Shortly, we shall be asked for another \$100,000,000 to carry on the labor over there another year. Every man and woman and child among us must give as freely as he can. This includes both you and me!

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Their profit lies in the performance of the trucks.

Their cost records on the first Federal they put in operation so conclusively proved Federal economy and dependability in the severe service of hauling stone, concrete and gravel that they now have a fleet of four 5 ton Federals and one 1 ton Federal.

This is further proof of the fact that where one Federal is put in service it soon sells another.

Write for "FEDERAL TRAFFIC NEWS"

Federal Motor Truck Company  
435 Federal Street      Detroit, Mich.

*Another*  
**FEDERAL**

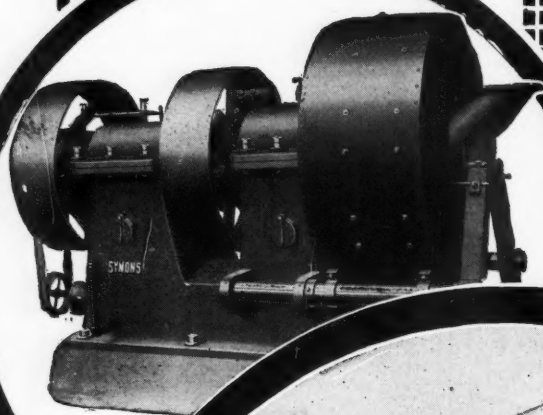
# FEDERAL

*A Capacity for Every Business Requirement*



*This 5 ton Federal is the latest addition to the fleet of Federals owned by Eager's Commercial Garage, Boston, Mass.*

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## The Slider Digger

operating on the Ohio River is one of the largest and most efficient of its kind. Crushing as well as washing and screening is all done on the novel, floating plant shown above.

As usual, where progressive methods rule, the

# SYMONS Disc Crusher

is found. And true to its reputation it is crushing the hard river gravel at a minimum cost for upkeep.

Symons Disc Crushers are made in 18, 24, 36 and 48 inch sizes. They are unexcelled as secondary crushers or as breakers when the feed is small.

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ILLINOIS

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# Rock Products

Vol. XXI

Chicago, May 22, 1918

No. 2

## Preventing Accidents in Stone Plants

High Time for Operators to Give More Attention to  
Greater Efficiency and Safety

**I**N CO-OPERATING with the State Industrial Commission for accident prevention, the quarry operators of Ohio have set a precedent which every other state association of similar character, and ultimately the National Crushed Stone Association, will do well to follow. In the case of Ohio the operators carry their insurance with the state at actual cost, a condition which brought home to them more quickly and more forcibly the money value of accident prevention than perhaps is the case elsewhere. Nevertheless, under any system of insurance the operator pays the cost not only in money, but in the lessened efficiency and morale of his labor. Moreover, in these days of labor scarcity and curtailment of non-essential industries labor conservation, and primarily conservation of life and limb, are of paramount importance, aside from all humanitarian considerations.

**A**CCIDENTS at quarries during 1916, according to the latest returns made to the United States Bureau of Mines, show an increasing number of fatalities as well as an increasing fatality rate per thousand men employed. The number of fatalities reported was 173 as compared with 148 in 1915, whereas the total number of employees reported was 90,797 as compared with 100,740 in 1915. These figures are by no means complete, as there is no Federal law compelling operators to make returns. The fatality rate based on these returns is 2.26 as compared with 1.80 in 1915. Non-fatal injuries also increased from 117.3 per thousand workers in 1915 to 175.6 in 1916. These figures do not necessarily indicate that the hazard of the industry is increasing at these rates, but rather that the requirements of state compensation laws are bringing out the real facts. Nevertheless, the experience of the Ohio State Industrial Commission bears out the statistics of the Bureau of Mines in showing that quarry operators have been lax in their attention to accident prevention.

**T**HE ANALYSIS of accidents made by the Bureau of Mines shows that crushed stone operators have more accidents than manufacturers of building stone. The underlying reason for this has probably been not so much that the cut stone operators have better safeguarded their workers as that their product has required more careful handling to prevent damage that would

decrease its value. Yet, for saving money, safeguards for conserving labor are of far greater importance. The crushed stone operators in the State of Ohio alone are paying annually nearly \$150,000 for insurance to cover the actual cost of preventable accidents, which could be reduced at least a half if the same precautions and thorough inspection were practiced as in European countries. The death rate per thousand in France, Great Britain and Italy averages one or less as compared with over two per thousand in the United States.

**A**CCIDENT PREVENTION is nothing more or less than the application of common sense rules. An inspection of some Ohio quarries proved beyond question that the accident hazard could be cut in half at very small cost. The trouble is that in the average quarry accident prevention is made everybody's business in general and nobody's business in particular. Scores of dangerous conditions are self-evident if brought to the attention of responsible employees, yet constant association with these conditions blinds the average employee to their hazard. The tendency has been too much to regard accidents or lack of accidents as bad or good luck, whereas there is good and sufficient cause behind every accident.

**M**ANY accidents which are attributed to chance may be avoided by the observance of a few sensible rules in machine design. Revolving or moving parts of machinery should be guarded and protected in such manner that the clothing of an attendant cannot become entangled. How many stone crushing plants pay any attention to this simple rule? Accidents from this cause alone caused 29 deaths and over 1,300 injuries in quarry plants in 1916, or as many deaths and four times as many injuries as resulted from handling explosives in the same plants.

**N**O BETTER argument can be given for accident prevention than a study of the above statistics. Consider only for a moment that the quarry operations of the United States are costing annually the lives of nearly 200 men and injuries to 13,000 others, to say nothing of the untold misery and suffering of the widows and orphans, and the need of conscientious accident prevention is only too apparent.

# A. Y. Reed Sand and Gravel Co. Has Complete Machine Shop

A Home-Made Institution at Elgin Developed by Its Superintendent—Three Men, Including Engineer, Run Plant from Hopper to Bins

FOUR outstanding features are claimed for the A. Y. Reed Gravel Co. plant at Elgin, Ill., all of which the president, A. Y. Reed, and his able and inventive superintendent, W. E. Supernau, would undoubtedly describe in the one word, efficiency.

These features are:

1. A plant built according to the superintendent's own plans with much of the machinery and equipment made on the premises in the company's own machine shop—a home-made plant.
2. Systematic arrangement of equipment.
3. Minimum amount of labor required to operate.
4. Economy of operation, a resultant of the first three features.

## The Handy Machine Shop

The most unusual thing that will strike the visitor is the machine shop, certainly a curiosity in sand and gravel operations. It is a complete establishment under the charge of the superintendent's brother, Charles J. Supernau. An inventory in this structure will show two engine lathes, one planer, one milling machine, one drill press, one hack saw, two emery wheels, one band saw, one four-foot blacksmith forge with 6-in. fan, one 6 h. p. engine which runs the shop; steam furnished from main plant.

In this department the company manufactures its own screens, welds its own boiler flues and does all its own repair work. The company buys raw material and makes all the tools needed in the operation of the plant. This department is the means of saving much time and labor and of preventing delays, shut downs and similar money-losing conditions. If there is any part missing, broken, or worn out, the machine shop can take care of the situation ably.

## Runs Like Clock-work

In describing the machine shop one tells a great part of the story of the home-made plant, feature number one. Not only is the systematic arrangement of the plant credited to the superintendent but also the construction work, and therein is explained the phrase, "home-made." It is so arranged that the plant requires the attention of only three men: the man at the hopper receiving raw material from the locomotive crew, who manages the long conveyor belt; the washer, screen, crusher and storage bin man whose duties are indicated in his title; and the engineer who



Looking from top of hopper: at right, ascending belt to washer; at left, belt returning crushed material from gyratory machines to hopper; grinder seen at bottom of this belt is the No. 5; structure at left center, the machine shop

furnishes the steam to keep the machinery moving.

"The plant works as smoothly as the celebrated watch that has made Elgin famous," says Mr. Reed, and the superintendent approves the statement.

## Digging the Material

The digging crew are now operating 1,000 ft. from the hopper. A 70-ton shovel with  $1\frac{1}{2}$  yard dipper lifts the material to the steel hopper bottom-dump car which has a capacity of 100,000 lbs. The crew consists of the shovel engineer, fireman, cranesman and two pitmen. In a ten-hour day, this crew can handle from 1,500 to 1,600 cu. yds.

A duplicate shovel is in position at the other end of the pit where the crew have been working until recently. There is also an auxiliary revolving shovel with a  $1\frac{1}{2}$ -yd. dipper. In normal times, both the main shovels are constantly working.

The loads are drawn by a 90-ton six-wheel switcher on a standard gauge track with which the whole pit field is laid. The locomotive which carries a crew of two, pushes its load up an incline on a 4 per

cent grade to the top of the concrete hopper, 25 ft. above quarry level.

From here the material is carried up a belt conveyor, for a distance of 173 ft. to the grizzly and washer at the top of the plant, 65 ft. above ground. The belt, a balata belt, is 30-in. wide.

## Screening and Washing

All material passing through the 2-in. screen, or grizzly, passes on to other screens laid out in pairs on a decline. These screens are arranged in the following order  $1\frac{1}{4}$  in.,  $\frac{3}{4}$  in. and  $\frac{1}{8}$  in., which provide for all the varieties of gravel the company produces.

As the company makes but one grade of sand, one pair of settling tanks takes care of the flowage from the flumes leaving the screens. This pair of settling tanks is equipped with the superintendent's patent valve for separating the water and clay from the sand. It has been in use here for more than six years.

In addition to the heavy stream of water poured on the raw material at the top of the washery two small streams are sprayed on the material in each screen through which the material passes. Each screen is



equipped with two 1-in. pipes, which are perforated and extend into the ring from the bottom. The screens are 12 ft. long and 4 ft. in diameter.

Below the screens are the storage bins from which the cars are loaded by chutes. Here water is employed again, both for more cleansing and for aiding in the loading. A car with a capacity of 100,000 lbs. can be loaded in three minutes and two cars can be loaded at a time.

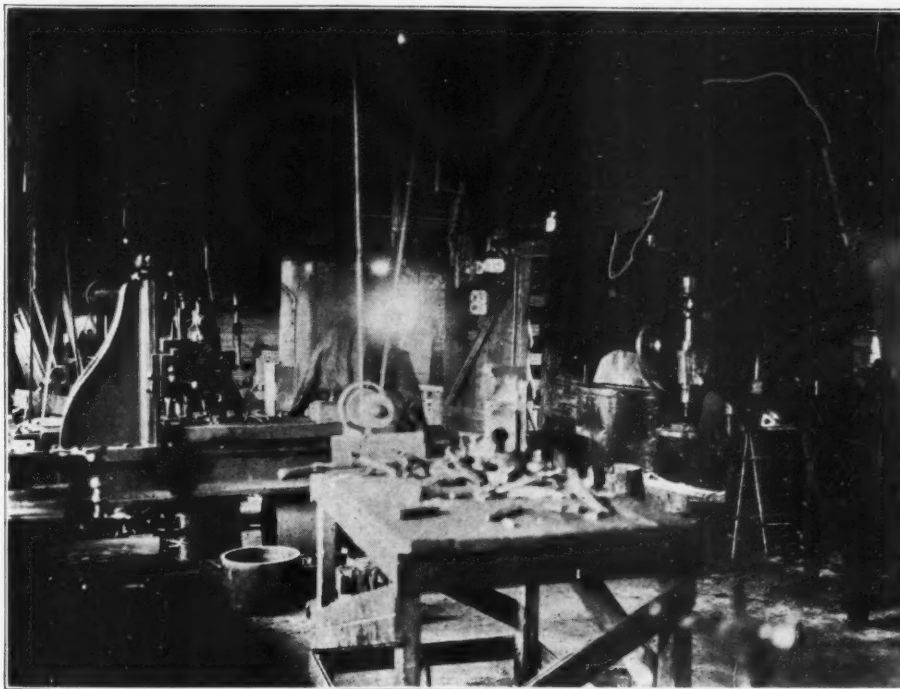
Rejections from the grizzly go by chutes to the gyratory crushers, either a number 3 which reduces the material to  $1\frac{1}{2}$  to 1 in., or to number 5, which reduces to  $2\frac{1}{2}$  in. From the crushers the gravel goes by conveyor belt back to the hopper, the starting point, and then travels up the long belt to the top of the washery.

A number 36 disc crusher is used; it is arranged to break down the company's number 9 which is stored material, or it takes direct from the 2-in. grizzly, to break to  $\frac{3}{8}$  in.

#### One Man in Engine Department

The plant is run by a four-valve engine with a 17 by 21 cylinder; 135 h. p. Steam is made by two boilers, one 72 in. by 20 ft. the other 72 in. by 18 ft. There are two boiler feed pumps and one open pan heater. An 8-in. centrifugal pump draws water from the river a few feet away at the rate of 1,100 gal. a minute. This supply of water goes in steady stream to the washery and also supplies the small pipes in the screens and at the car loading flues. One man runs the boiler and engine room.

The Reed gravel land occupies 220 acres of which about 12 acres have been worked over. The gravel bank is about 36 ft. deep on the average. The material runs 50 per cent gravel and 50 per cent sand, although there is an occasional variation to 60 per cent gravel and 40 per cent sand. It con-



Interior of machine shop where all repairs are made

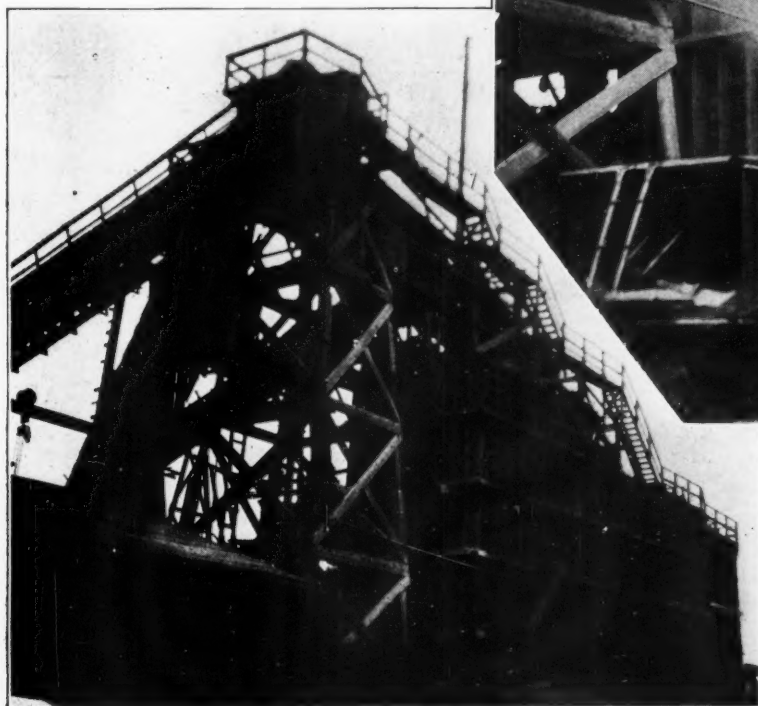
tains to some extent "French" and other granite, limestone, and Jasper stone which is so hard that it is used at the watch factory for grinding jewels.

#### Stripping Method

Stripping is required on a considerable part of the pit, the overburden running about 2 ft. deep. A drag-line machine with 96 ft. boom and  $1\frac{1}{4}$  dipper does the stripping, the work requiring an engineer,

a fireman and a ground man. This crew and outfit can handle about 800 yards a day. The machine, of the revolving type, delivers the dirt into the pit from which material has been removed far enough away not to interfere with regular operations in the slightest. Stripping cost may run from \$8 to \$15 a day. Mr. Reed estimates the cost at about 15 cents a cu. yd.

Three grades of gravel and one of sand



Above, view of the bins and loading flumes; the 30-ton locomotive has just brought the car being loaded at extreme right; the car in front is one of the company's hopper bottom dump. At left, general view of washery, screen department and storage bins; the building in lower left hand corner is the power plant.

are produced, as follows: No. 2, Torpedo sand,  $\frac{1}{4}$  in. down; No. 5, roofing gravel,  $\frac{1}{4}$  to  $\frac{3}{8}$  in.; No. 8,  $1\frac{1}{8}$  in.; No. 9,  $1\frac{1}{2}$  in.

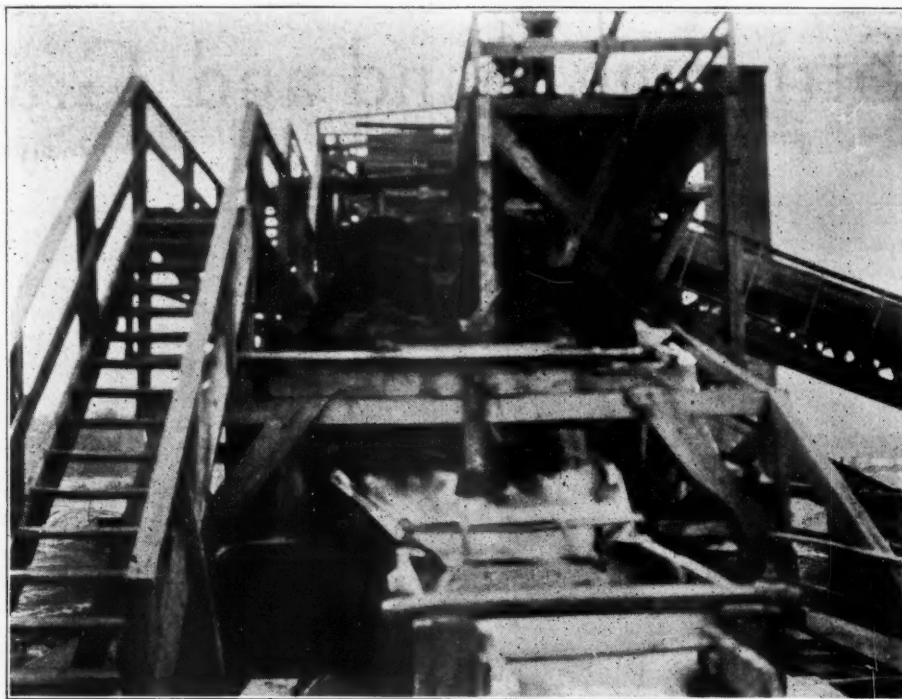
The company is preparing to make No. 1 sand, and for that purpose will install a new type of settling tank, the practical adaptation of an idea of the superintendent.

In addition to the locomotive described the company owns a 30-ton four wheeler, both of which are used either in hauling material from the pit or for spotting cars. Two steel cars hopper-bottom dump and a number of other ballast cars are used in the pit.

#### Loading and Storage Tracks

Between the plant and the river the company maintain switch tracks for loading with a capacity of 40 cars. On the opposite side of this plant between it and the pit operation, there is car storage trackage for more than 75 cars.

The company also practices ground storage for which it has acres of room. At present it is devoting outside storage to its largest size of gravel,  $1\frac{1}{2}$  in., which is carried to the dump by a car running on elevated tracks.



The screens and settling tanks at top of plant, looking toward washery

### Ohio Sand and Gravel Bulletin Is Out

THE Ohio Sand & Gravel Producers' Association under the impetus of its organization, April 3rd, has gone actively into constructive work, and taking advantage of the enthusiasm due to that meeting and before the momentum could dissipate itself, has brought forth the "Ohio Sand & Gravel Bulletin," a four pager, of optimism and encouragement. The executive secretary, Guy C. Baker of the Greenville Gravel Co., Greenville, Ohio, is editor.

The leading contribution to the Bulletin is a letter from the president, F. D. Copdock of Greenville, who addresses the membership as follows:

"Never before in the history of our country was it so imperative that allied industries put themselves right with their competitors, and that allied industry as a whole put itself right with its government.

"The formation of an Association of Sand and Gravel Producers in Ohio is therefore essentially timely. Such an association should be not only beneficial to its members, but by intelligently working out transportation problems with the Government will likewise be contributing its 'bit' in this great national crisis.

"Unquestionably there are producers in our association who could have better served it than I as its initial President. I esteem the honor highly, however, and during my incumbency in office it will be my earnest desire to advance in every legitimate way the interests of its members.

"To justify its existence the association will have to show results. The President cannot do this of his own efforts. He shall have need of the support and co-operation

of all the owners and members of the association. As a live industrial alliance let us strive to make the Ohio Sand and Gravel Producers' Association second to no other in the country.

"Very cordially,  
"F. D. COPPOCK."

### Big Deposit of Moulding Sand Is Opened

BECAUSE of lack of equipment for the development of its tract of concreting sand and gravel, the Delaware Sand Co. of Belvidere, N. J., a new \$150,000 corporation, is working its extensive deposit of moulding sand, said to be one of the largest and best in the country, containing various grades of excellent quality. It is a glacial deposit that covers a wide area at Delaware, N. J.: in several places it is 12 to 15 ft. deep.

The company estimates the deposit contains many millions of tons and regard the supply as practically inexhaustible. Although thousands of tons have been taken out, the deposit really has scarcely been touched. Shipments of various grades of moulding sand, however, are made, and the list of customers include a number of well known foundries.

It is at Delaware also that the company owns the large acreage underlaid with concreting sand and gravel. While no shipments have been made, the company expect to have machinery installed in a few months for the purpose of production.

#### Chemists on Tests

The company makes the claim that experts who have subjected this sand to tests in cement briquettes find that this concrete possesses the greatest tensile strength of

any known sand mixture. R. B. Gage, chemist of the New Jersey Laboratory of Department of Conservation and Development, says: "On the sample tested we secured an average tensile strength of 378 lbs. per square inch. This test was made on material after screening and only that part used which passed a 10-mesh sieve."

The president of the company is H. K. Mulford; W. J. Burd is secretary-treasurer and general manager.

### Bibliography of Sand

THE Technology Department of the Carnegie Library of Pittsburgh, Pa., has published a 74-page booklet on "Sand—Its Occurrence, Properties and Uses." The subjects covered are: Occurrence and properties; transportation by natural agencies; physical properties; exploitation; statistics of production; sand for concrete; molding sand; glass sand, sand for ceramic industries, filter sand, sanding of rails and miscellaneous data.

The subject of exploitation, which is of the most interest to readers of ROCK PRODUCTS, is subdivided into the following: Quarrying and handling in general; methods and machinery; costs; washing, screening, storing, etc. The subject of sand for concrete, mortar and structural purposes is subdivided into: Properties and specifications; tests, treatment; use in pavements.

The publications indexed by this bibliography include the technical and trade journals, State and Federal Geological Survey bulletins, etc. For those who would like to become acquainted with all the ramifications of the subject of sand, this publication will be of interest and value.



# Stripping Sand and Gravel Deposits

## Summary of the Practice of 50 Plants

**P**REFERENCE IN THE GRAVEL-PIT stripping methods of 50 reporting plants seems to be about evenly divided between the steam-shovel and the drag-line excavator. Only two of the operators have done hydraulic stripping. One of these thoroughly believes in this method, the other prefers the steam-shovel method. Unfortunately the company which advocates the hydraulic method has kept no cost data so it is not possible to compare its cost by hydraulic stripping with the steam-shovel or drag-line methods used elsewhere. None of these 50 companies is fortunate enough to dispose of stripping at a profit, as suggested in the accompanying statement of F. W. Renwick.

Where the depth of overburden is 3 ft. or more, the use of a steam shovel, and stand-

ard or narrow-gage railway dinkies and cars for hauling, is the favorite method. These are, of course, plants which use steam shovels for excavating the sand and gravel as well. The cost of stripping by this method is given as 12 c. to 35 c. per cu. yd. The operator stripping at 12 c. per cu. yd. uses teams and wagons for hauling. The overburden in this case was from 4 to 6 ft. thick with no grubbing necessary. The excavated material was dumped in an adjacent abandoned pit.

The operator which stripped with steam shovel at 35 c. per cu. yd., removed 2½ ft. of overburden (red clay) in winter, when the ground was frozen. Another operator, whose cost of stripping 3½ ft. of loam and clay runs as high as 25 c. per cu. yd., prefers automatic dump wagons to dinky and

dump cars for handling the waste material. One operator has tried the hydraulic method, teams and scrapers and steam shovel and dump cars, and has come to the conclusion that the steam-shovel method at 20 c. per cu. yd. is the best for local conditions. The other methods are stated to be satisfactory if conditions are favorable.

Another operator removes 7 ft. of overburden with steam shovel and 2½ yd. side dump cars at a cost of 17 to 20 c. per cu. yd., which was found cheaper than the use of wheel scrapers. The overburden here contains 5 ft. of clay, which is evidently too heavy work for anything but a steam shovel or drag-line.

Nearly all the companies using drag lines for stripping have an overburden of

### F. W. Renwick, General Manager of the Chicago Gravel Co., on Stripping

**T**HE QUESTION OF STRIPPING, although one of the most important in the production of sand and gravel, is one that seems never to have been properly considered by the majority of operators. This is especially true, and perhaps not to be wondered at, in the case of beginners in the gravel business.

Nine out of ten men who are first breaking into the gravel business will tell you about every desirable and advantageous feature of their proposition without mentioning the stripping. When asked concerning this most vital point they invariably will tell you that this amounts to "practically nothing," and in their opinion and their particular case no stripping will be necessary. These same people within six months will find themselves consulting someone in reference to the best method of disposing of their stripping which has developed into a feature of unexpected proportions.

The older producers with their experience have continually tried new and various methods for disposing of stripping in the most economical manner, and these methods embody everything from the original and primitive plan of moving dirt by teams and wheel scraper to all sorts of mechanical appliances, and even hydraulicking, which, when conditions are suitable, is one of the most

practical ways of removing overburden.

The experience of the Chicago Gravel Co., covering as it does twenty-two years, and all sorts of conditions, has undoubtedly been about the same as others that have been at it for the same length of time. The character of stripping material as a rule does not vary a great deal, generally showing from a foot to 18 in. of top soil or loam, below which is a sub-soil of clay ranging in depth from 2 to 6 ft., according to the general contour of the land on which the gravel deposit is found.

When gravel is found in a hill, particularly of 50 ft. or more elevation above surrounding land, the stripping is apt to be lighter than in any other kind of gravel deposit, and frequently under these conditions team stripping, even at the high cost of from 20 to 24c per cu. yd., is the most economical manner in which the work can be done. As is usually the case, the stripping which is light uncovers such a large face of gravel that the actual cost of the stripping as compared to the yardage of gravel uncovered is not excessive.

The use of a steam shovel for loading stripping, either into dump cars or regular railroad equipment, is probably the one most employed where a suitable way of disposing of the material is available. If a market for this stripping material

can be found, say for filling trestles, track elevation, or similar disposition, even at a low price, the cost of the stripping can be reduced to a minimum, but the great difficulty on this proposition is finding the market at the time the stripping is to be done.

For this reason the most practical equipment that has recently been adopted by many operators is the drag-line excavator with sufficient length of boom to deposit the stripping beyond the loading track and into the pit from where the gravel has already been removed. The original cost of installation of a machine of this kind is considerable, but if the same machine is used for loading the gravel after stripping operations, the actual cost of removing the stripping has been reduced to a minimum. In most cases it would not exceed 5c per cu. yd. of stripping so disposed of. Another advantage of this class of outfit is that the black dirt or top soil can be removed separately from the bulk of the stripping and marketed at a price that yields a very good return on the cost of operation, frequently to the extent of a fair profit.

The more experienced producers have learned that a large amount of stripped gravel is an asset to their conditions and benefits their business just the same as any other form of preparedness.

only 2 or 3 ft. to contend with. The type of drag-line equipment used varies considerably, but the derrick or boom type is the one preferred. One uses a locomotive crane with drag-line attachment. Hauling is done by both dinkies and teams. Unless the dinkies and cars are necessary to the pit operation or the amount of material to be moved is considerable, probably team haul is the most economical.

One operator claims to have reduced the cost of stripping with drag-line and teams to 10 c. per cu. yd. Probably nearly all of these plants use drag-lines for gravel excavation and very few of them make stripping a distinct operation—very few know the cost of this item. In nearly every case the drag-line excavator is used for stripping between train trips to the washing and screening plant. Only two operators have had an opportunity to compare the cost of drag-line stripping with other methods and in each case it was cheaper than teams and scrapers or any other method tried.

#### Scrapers and Teams

Stripping from 1 to 3 ft. of overburden with scrapers and teams seems to be comparable in cost and economy with drag-line stripping. One operator prefers wheel-scraper stripping to steam-shovel work. The depth of overburden, however, is only 3 ft., which is too shallow for economical steam-shovel work. It costs this company 35 c. per cu. yd. for stripping. The gravel pit has 60 ft. of water in it and the stripping is used to build an embankment around this pool to keep out the public. On the face of it, hydraulic stripping would

seem economical and efficient under such conditions. Another company strips 2½ ft. of overburden with teams and at a cost of 27 c. per cu. yd.

#### Found Shovel Preferable

One operator removes from 6 to 7 ft. of overburden with teams and scrapers at a cost of 22½ c. per cu. yd. The nature of this overburden is loam and clay. It is the only instance obtained where an overburden of this depth was removed by any other than the steam-shovel method. The cost, too, is comparable to the steam-shovel method. On the other hand the only operator who tried out both methods on a considerable scale under similar conditions (7 ft. of overburden) found the steam-shovel method preferable and reduced his cost to from 17 to 20 c. per cu. yd.

An elevating road grader is used by one operator to remove 3½ ft. of overburden. This operator has tried no other method. The property is a level tract and the depth of overburden is very uniform. This is not an experiment for the same method has been used there for ten years. The average cost for the ten years is 25 c. per cu. yd.

#### Cost of Stripping

Judging from the data in hand few operators know what stripping costs per cubic yard of sand and gravel produced. These costs where given vary from 1.2 c. to 4 c. per cu. yd. The average is between 2 and 3 cents. Therefore a gravel deposit thoroughly stripped increases the value of the deposit at least 2 c. per cu. yd. In the case of a 500,000 cu. yd. deposit this is \$10,000, which, as Mr. Renwick says, is a genuine

asset and should be so considered.

This charge should not be lost sight of. It should be added to every ton of gravel sold. That is the only fair way to distribute the cost of stripping. It is distinct from the depletion charge which should be the basis for all price fixing.

#### Don't Forget Some Other Costs

The depletion charge represents the value of the gravel in place. The elements which enter into it are not only the purchase price of the land, but a speculative value on account of availability of transportation facilities and markets. To all practical purposes a gravel pit is in the same class with a mine, and every cubic yard of gravel has a definite value before a single dollar's worth of work is done to develop the deposit. In other words the value of the land must be forgotten in terms of so much per acre and the value of the deposit considered in terms of so much per cubic yard. What is a fair value for this depletion charge is a matter of debate—generally 5 c. is considered justified.

#### Heed the Warning

Therefore, let every sand and gravel producer take heed of Mr. Renwick's warning. Don't neglect stripping for it is going to cost money. Also, if you are alive to the elements of real cost-keeping don't neglect a depletion charge. It may easily be that every yard in your gravel pit has cost you 10 c. before one yard of it has been taken out. The operator who prides himself on producing so much cheaper than his neighbor should look into his cost-keeping.

## Three Ontario Gravel Plants

THREE interesting sand and gravel plants in the province of Ontario are briefly described in the Canadian Government report:

**CATARACT SAND & GRAVEL CO.**—One of the largest sand and gravel pits in the Province of Ontario is at Cataract Junction, Caledon township. The top layer of the working face is a coarse gravel and the bottom bed is composed of finer gravel with clean sand between the two gravel beds. In the summer of 1916 a plant was being installed to strip the upper bed of coarse gravel, and thus work the pit in benches, doing away with the screening plants. A clam shell hoist and hopper was erected on the upper bank, and the material loaded directly into cars below, through a chute 120 ft. in length. By this arrangement it is possible to extract the 20 ft. of clean sand without screening.

The pit was purchased by the Hydro-electric Commission in the spring of 1916, and work is under the direction of Chief Engineer F. A. Gaby. W. A. Alexander was superintendent.

**CONSTRUCTING AND PAVING CO.**—

In the township of Erin, this company operates a large sand and gravel pit. The material is dug by a clam-shell bucket and hoist and loaded into dump cars, of a capacity of 5 cu. yds. each. These are hauled on the level to a hopper, and fed directly to a No. 3 gyratory crusher. From the crusher it is elevated to a revolving screen 14 ft. long by 3 ft. in diameter, constructed in two sections, 10 ft. of sand screen and 4 ft. of gravel. This gives two products, sand and gravel. The crushed boulders are not separated.

Officers: James Pearson, Toronto, president; F. B. Neave, Toronto, secretary-treasurer; W. E. Bristow, superintendent.

**ROCSAND CO., LTD.**—In several places in the Province of Ontario where deposits of mixed sand and gravel are being worked and where a large percentage of the gravel consists of boulders too large for shipment, the constituents are carefully screened and the boulder product broken in gyratory crushers. This method utilizes the whole output of the pit and gives three products, screened sand, gravel and crushed stone.

About 20 miles northeast of Guelph on

the Canadian Pacific Ry., at Erin, Wellington county, the Rocsand Co. of Hamilton works such a deposit. The material is dug by a clam-shell bucket and hoist and loaded into cars with a capacity of 3 cu. yds. each. These are hoisted to bins and discharged through a hopper feed to a grizzly, with 3-in. opening. This removes at the first operation all boulders, which are elevated to a No. 4 jaw crusher.

The undersize is elevated to a revolving screen, built in three sections, 6 ft. with screen opening ¾-in. diameter, 6 ft. with 1¼-in. screen opening, and the balance with 3-in. opening. From the hoist to the working face is 450 ft. and the tracks are extended as required. The sand and gravel are loaded directly into cars, and the crushed rock is stock-piled. The officers are J. G. Baby, Hamilton, president; W. S. Connolly, Hamilton, manager; W. J. Dickson, Erin, superintendent.

#### Boom in Jersey Sand Pits

MILLVILLE, N. J.—So great has become the demand for sand by the war munition plants that some of the pits south of Millville are now being operated night and day.



# Uniform Cost Accounting for Stone

Comparable Cost Records Depend on Proper Division of Costs; Explanation of Daily Overhead and Volume Costs

By R. W. Scherer

THE POSSIBILITY of a uniform accounting system for crushing plants has been suggested by the Board of Directors of the National Crushed Stone Association. The suggestion is an excellent one in that a discussion of costs by an interchange of ideas on the subjects can only tend to clarify a much vexed question and clarity in production costs of crushed stone is very much to be desired. I think a discussion of some of the factors entering into the problem will not be amiss at this time.

There are essential differences between the quarry business and almost every other line of manufacturing. In the first place the cost of raw materials is so low that the cost of manufacture is 90 per cent or more of the cost of the product. Another peculiarity is that for a small volume of business the entire plant must be operated. In other lines, a suitable number of units are set in motion as the market demands, or the whole is operated and the finished product is stored. The cost of storing and reclaiming crushed stone is often considered prohibitive, and then working a large plant for small business is unavoidable at certain seasons. These radical differences in conditions make a different cost analysis advisable in the crushing business.

## Ignorance of Real Cost

We all know where the often ruinous competition within the crushed stone industry itself has its birth: for one thing in the sublime ignorance about ultimate costs of not only the novice in the business but of older operators as well, who have for years only just hung on by the skin of their teeth thinking that they are gaining territory or eliminating a competitor or what not.

But it is not all ignorance; another factor enters—one which it will do no good whatever to ignore, and that is "volume." The fact remains that the more any plant produces, the cheaper will be the production. Every quarryman knows this; it obtrudes itself from every viewpoint and can be expressed in various ways, for instance, if in a hand-labor quarry you are producing 100 tons per day at a cost of \$100 an additional 100 tons produced on the same day (capacity of the plant permitting) will not cost \$50, bringing the average cost of the total output down to less than 75 per cent. In a large steam-shovel quarry you know that it makes no appreciable difference in operating expense, whether the shovel is used to its full capacity or to one-tenth of it, except for wearing parts.

So the universal demand of the crushed stone business is for a large volume of production. This production, in its steady

flow from the face of the quarry, through the plant to the consumers, can be likened to the flow in a water main; there must be no hindrance at any point. What will a mile of 2-ft. water main help if at some point, though only for a foot of its length, all the flow must pass through a 2-in. pipe? The capacity of that main is fixed by the capacity of its smallest section just as, in the crushing business, the output is limited by the capacity of the weakest link in the chain of production, very often by the capacity of the quarry face itself, by the transportation facilities, the initial breakers, the screens, the recrushers, and finally by the market. When the hindrance to increased production is the lack of market, the temptation is great to increase that market by increasing the territory served.

## Volume Must Be Considered

Every operator knowing the general effect of volume it would be unwise to ignore it in a cost-accounting system; it should rather be taken fully into account and analyzed so that its effect on ton costs may not be overestimated, as it now frequently is over-estimated. And a cost-accounting system that does take volume into account is quite possible; in fact, such a one is the only one which will really analyze costs and detect leaks. The system is simply to eliminate those items that are fixed for every day the plant is operated, whether much or little is produced—besides eliminating what is usually classed as "overhead expense."

## The Leak Was in the Fat Month

For instance, the manager of a hand-work quarry finds the cost of labor in April 63 cents per yard, in August it was 49 cents. Was there a leak in April? Did the men work harder in August? Not necessarily; the explanation is "volume." An analysis of the detailed figures showed that in this item of labor were included the charges for a quarry foreman, water boy, two crusher-men, and the driver of a horse in the quarry, a total charge of \$15 per day, the same in both months. In April this expense was incurred to produce 100 yards; in August it was distributed over 300 yards. The actual labor of breaking and loading (by day work in each case) was several cents less in April than in August. The leak was in the fat month and not in the one showing the higher cost, and was explained by the fact that the small April crew were more experienced.

## True Operating Costs Near Constant

Similarly with the ton cost of crushing,

it varies greatly with the volume of daily output, and this variable should be classed separately. In a plant operated by steam power I found it rather difficult to determine the difference in coal consumption between full capacity and half capacity, there was so little difference. Tests in an electrically-operated plant determined that 60 per cent of the power used at full load was consumed in running the plant empty. Here we had a large item of expense that was the same whether this plant produced 200 tons or 2,000.

No wonder that crushing costs varied from month to month and from day to day. The pay of engineer and plant foreman, the men in the crusher-plant, etc., are all items which are the same in large or small production and all such items should be placed in a distinct class and called **daily overhead**, as distinguished from interest, depreciation, salaries, fire insurance, etc., which are **annual overhead** charges.

## Ton Costs Based on Volume

All other items, those that are really increased in their total when production increases, should be classified as **ton costs**. It is clear that if you want to produce twice as much as heretofore, you must drill and blast twice as much, wearing parts will be required proportionately; if soil conditions are the same you will need twice as much stripping and in a hand quarry you will need twice as much labor. All such expense should be charged to "volume" and only such.

It is only by means of such an analysis that comparisons can be made between the experience in different quarries, or between different periods in the same quarry—by eliminating this variable, the varying production. Only by this means can a leak, or inefficiency anywhere in the complicated mechanism be detected.

When hand labor is replaced by one or more steam shovels in the quarry, their operating cost becomes largely a daily charge; they cost so much per day whether they shovel much or little. I found the daily cost of operating one of the largest size shovels to be \$82 per day or, more accurately, \$3,000 per year plus \$37 per day of operation including the experts, the pit crew, and track, but exclusive of repairs and fuel which were very heavy in this particular rock, amounting to 2c per yard moved. I believe that such a shovel will do 3,000 yards per day in this stone if you give it a chance; but it is a very big "if."

The rock must be properly blasted for the shovel and the cars must be there. There must be no delay, no blocking of the flow of stone anywhere along the line. The uselessness of making comparisons of ton

cost of loading from day to day in any one plant or between different plants is apparent; the figure depends directly on daily output; also the entire expense is a "daily overhead" charge. Only the repairs and the fuel can be charged to the number of yards handled, as it is safe to assume that wear and breakage will be proportionate to the output. Fuel consumption in a shovel, is also directly proportionate to the tonnage; all other charges to steam shovel account are fixed daily charges.

#### New Division of Costs Necessary

To formulate a system of cost accounting that will really throw light on the subject, we will have to get away from the old classification of **overhead** and **operating expense**, and subdivide the latter class into (first) overhead daily charges—the expenses incurred when the plant is started for a day's run and which are quite unchanged whether the production is up to capacity or only a fraction of the capacity—and (secondly) **ton costs**—those that increase with greater production.

Let us assume that a plant, having no storage facilities must be operated for two or three months in spring at one-third capacity in order to supply the small demand (and there are few plants that do not have to be so operated for months each season). It is found that it has cost \$1 per ton to produce the stone. What would additional tonnage in any amount up to the capacity of the plant have cost?

#### Produce More at Little Additional Cost

This is a vital question in the quarry business and yet few operators know the answer. They can all get the answer from such an analysis, as outlined above. Clearly the additional tons would not cost more superintendence, no more for the labor in the crushing plant nor for engineer, very little more for power and oil and in most cases nothing more for transportation, but additional tons will cost more for stripping, drilling, blasting, wearing parts, actual quarry labor (if labor is used) and for loading for delivery. The separation can easily be made to a nicety.

The actual cost of additional tons will be a surprise to most operators—surprisingly little to most crusher men. But they do cost something, a figure that can be definitely determined, and whatever it is, each operator should know it and can know it for his plant and quarry. Generally speaking in a hand labor quarry they cost less than 50 cents per ton, in a steam-shovel plant less than 25 cents, though I have found one quarry in very abrasive rock where they exceeded these figures because, wearing parts constituted an item of 10 cents per yd.; drilling 12 cents per yd.

#### Bearing on Stock Piling

Separating costs in this way will answer the absorbing question of "What will additional tons cost?" And then consider its bearing on the question of stock piling. If it is true, and you will find it so, that a

surplus produced during a semi-idle season costs much less for production, the question of stock piling takes on an entirely different aspect: the cost of handling from and to the pile is not quite so appalling.

If there are charged to stock pile only the **ton costs**—only such charges as would not have been incurred without it—a stock pile will always show a profit no matter how primitive and inadequate the appliances may be or how much the plant is over-equipped. And it is fair that stock pile should be charged with only such costs and not with the average cost of what goes into it.

Without the stock pile ton costs would have been much higher and stock pile must be credited with reducing production cost. The way to do it is to charge the account with only the ton cost. This very question spells the success or failure of many a plant and those who can see only one phase of it, the cost of placing and reclaiming, are far from the solution.

#### Daily Overhead Charges

Now these fixed daily charges are fairly constant for every day's operation, practically the same for 50 tons as for 300 of daily output. That is if they are put in a class by themselves they remain constant, can be scrutinized and possibly clipped; but when they are distributed over the tons produced, divided by the number of tons, the quotient is very variable. Say this daily overhead amounts, in a No. 6 plant, to \$25 per day; for 50 tons it means 50 cents per ton, for 300 it means 8⅓ cents.

Eliminate this variable and the rest of the items must in turn remain constant. For instance, in a hand labor quarry the actual cost of breaking and loading; in any quarry the cost of drilling and blasting, or wearing parts, of loading the finished product, etc. These items can all be compared from day to day, or between different plants, and when they vary an explanation can be sought in some other factor than **volume**.

Such a system of cost analysis need not be complicated nor cumbersome; in fact, it can be made rather simpler than with the stereotyped division into "overhead" and "operation" expense. Every cent expended can be distributed with accuracy—labor and insurance on each item of labor, as well as every cent's worth of supplies, repair materials and spare parts. It will answer the vital question "What will a surplus stock of finished product accumulated during a dull part of the season, really cost?"

It seems to me that an analysis of costs that does not reveal the truth about this problem is worthless for giving a true insight into the possibilities of the business.

Let us know the truth about volume and about the stock pile. And furthermore let us know the truth about all items of cost—the mooted question of the value of the stone in the ledge, about depreciation, and let us have schedules of all the items so

that at the end of a season's run, ends will meet, and so that there may be fewer operators who go into the market without knowing the value of their product.

#### Cost Comparisons of Limited Value

Comparison of ultimate costs or of single items in the schedule will still be very difficult. For instance, in the item of drilling and blasting, it will be useless to compare the experience in a limestone quarry with that in a granite quarry, to compare a 20-ft. face with an 80-ft. face, etc. In crushing costs, it will profit little to compare a No. 5 plant with one of the monster installations. Still the large operators do have complete systems of cost distribution, such as account for every cent expended. For each of their items there is a corresponding item in the small plant. Only by making ample allowance for each item can ultimate cost be determined, and a full discussion can result only to the benefit of the industry.

For instance one item, that of repairs. Depreciation must be charged, I should say, at the rate of 8 per cent annually on the plant itself, and this charge assumes a plant that is kept in good repair. But all repairs do not come every month or even every year. A new plant that is just started may not have any serious breakages for a year or two and still some big break is surely coming.

Undoubtedly an adequate sum should be set aside monthly, for such breakages, if indeed the spare parts are not brought and kept on hand. Otherwise several of these breakages may occur in quick succession, a crusher shaft, or spider, belts, boiler flues, screens, etc., and wipe out the nominal profit of a season or several seasons.

To base costs on a month's or year's experience in which no big breakages occurred is clearly ruinous; a constant charge, over and above depreciation must be made for repairs and breakages, the amount depending largely on the character of the stone. It is simply breakage insurance, just as one carries liability insurance. Let us hear from operators as to their practice and experience with breakages.

#### Depletion Charges

Another item that is frequently overlooked is the value of the deposit, and the corresponding "ton charge" for its depletion. Irrespective of the amount paid for the land, a certain charge is necessary. Even with an unlimited supply, as the stone is removed, the face gets farther and farther away from the plant until cost of transportation increases and becomes prohibitive. Then not only the cost of the deposit must have been wiped out, but also the plant has become nearly valueless since a dismantled crushing plant is, in normal times, worth less than 20 per cent of its original cost. This depletion charge varies greatly in different localities, but it is never negligible. To learn of the practice of other operators will help all to determine this and other items.



# New Castle Lime & Stone Co. Has Compact Mill

Buys Fines from Crushing Plant as Crusher Discharges Them

ONE OF THE LATEST additions to the list of limestone millers of Pennsylvania is the New Castle Lime and Stone Co., of New Castle. The plant of this company is in Hillsville, about three-quarters of a mile from that of the G. W. Johnson plant described in *ROCK PRODUCTS* of April 24.

This plant was designed, built and is operated by J. F. Rhodes, whose portrait is shown herewith. Mr. Rhodes has grown up in the limestone industry of this section, and this plant embodies his experience and ideas in economical layout and operation.

The view at the right shows the plant, before the erection of the storage bins, as viewed from the trestle leading to the tipple of the Lake Erie Limestone Co. The plan below shows the relative location of the plant and the stone company's tipple.

The Lake Erie crushing plant is unusual in that no bins whatsoever are provided. The dump cars are brought direct from the quarry, dumped into a gyratory crusher, which discharges to screens, which in turn discharge direct into railway cars spotted beneath the crusher. This stone is sold for fluxing purposes and ballast.

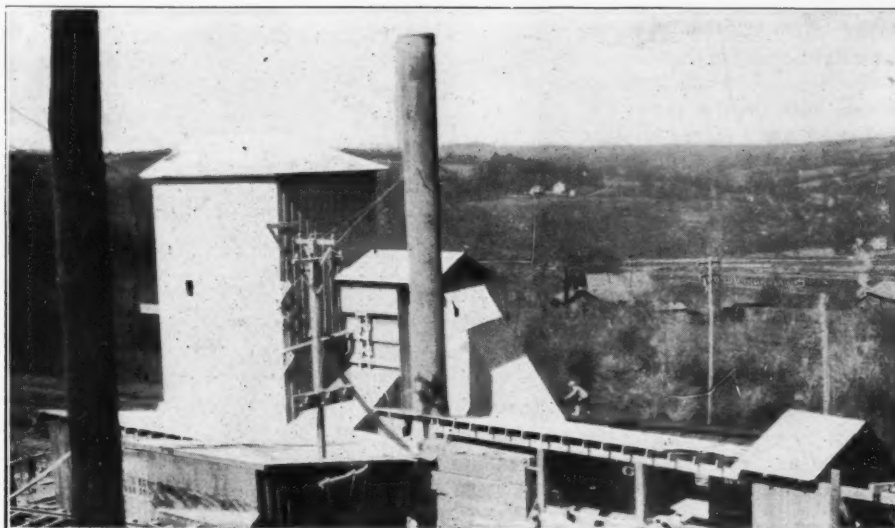
The screenings would ordinarily be wast-

ed or taken care of at considerable expense. They were the only product of the plant which required any rehandling, and consequently were a source of both expense and annoyance. Therefore they are purchased very cheaply.

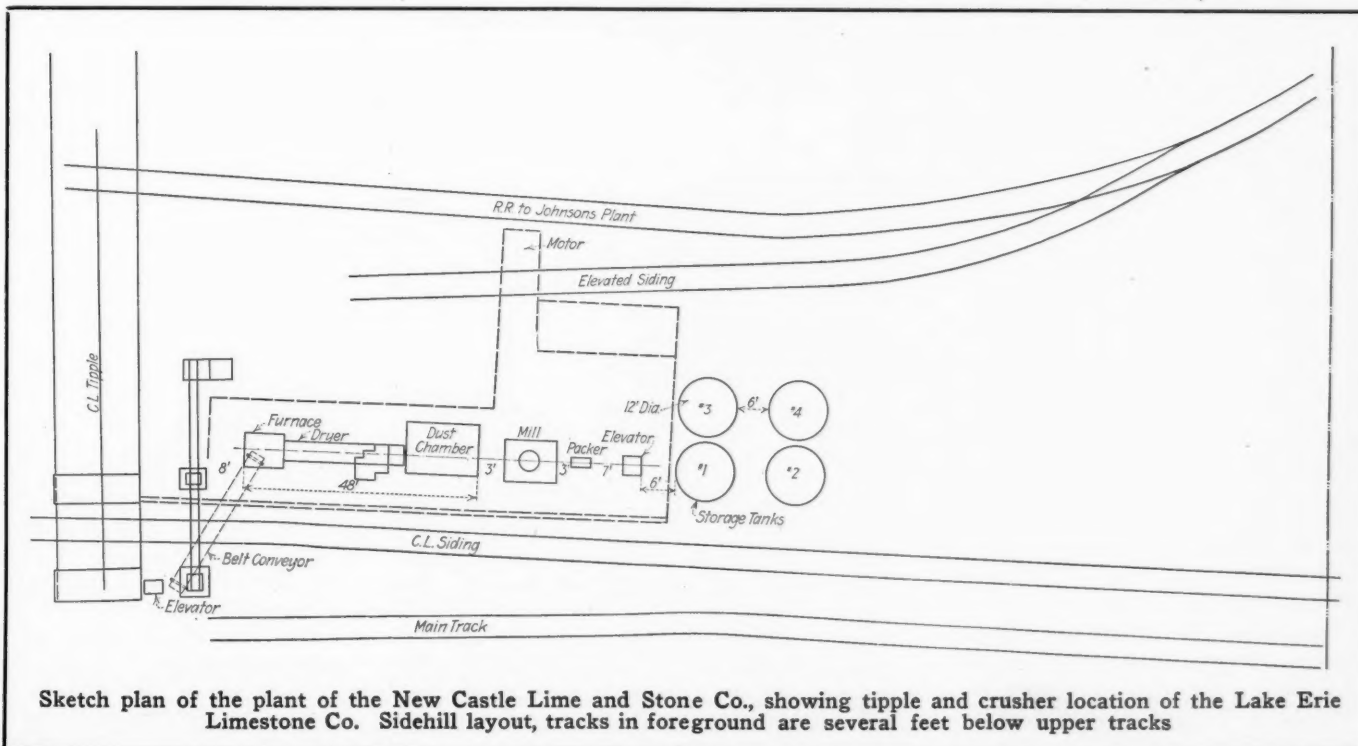
The New Castle Lime and Stone Co. gets these screenings as they leave the crusher and screens. They are discharged as fast as they are made into the hopper opening



J. F. Rhodes



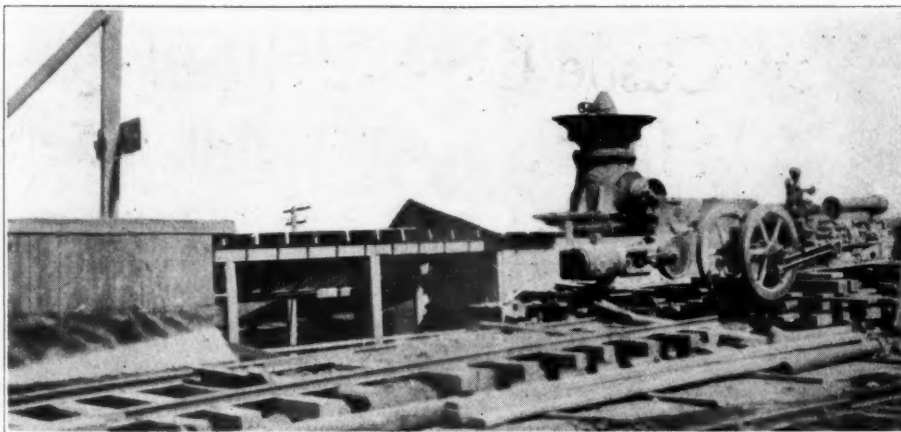
Limestone pulverizing plant of the New Castle Lime and Stone Co.



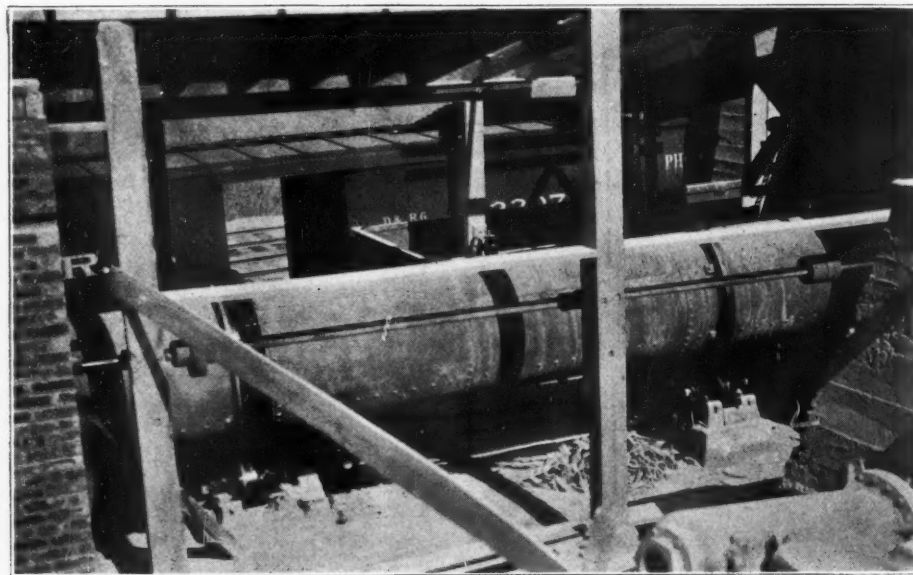
Sketch plan of the plant of the New Castle Lime and Stone Co., showing tipple and crusher location of the Lake Erie Limestone Co. Sidehill layout, tracks in foreground are several feet below upper tracks

of a revolving drum dryer. From the dryer the dry stone is fed through a small bin to a ring-roll pulverizer. From the pulverizer the finished product is elevated to a bin feeding a bagging machine or to four 12-ft. circular wood storage tanks.

The pulverizing plant is, of course, designed to take care of the screenings of the crushing plant when continuously operated. No storage of raw material is provided in case of shut down of the crushing plant, which in turn is dependent absolutely on the railway car supply. However, this unfavorable feature is met by the fact that it costs nothing to deliver the raw material to the plant; and the operation of the pulverizing plant is so simple that it can be accomplished by only



Crushing plant of the Lake Erie Limestone Co., showing results of fire



Dryer for limestone screenings as they come from crusher

two men besides the foreman, or superintendent.

The accompanying view of the crushing plant shows the result of a recent fire which destroyed the timber tipple and housing, but left the crusher on its concrete foundation, but little the worse for the fire.

### Mammoth Cave Quarry Co. Buys Onyx Land

MUNFORDSVILLE, Ky.—An interesting quarry deed was recently filed at Munfordsville, Ky., when the Mammoth Cave Quarry Co. paid \$76,000 for a piece of property, which H. B. Haywood bought from H. C. Laird, near Cave City, for \$400 last winter, when the property was covered with several feet of snow. The land contains some big deposits of onyx, which has become very valuable.

### To Spend Million Developing Nevada Potash Deposits

EXPLOITATION of the potash fields of Nevada on such a scale that production from that state will equal the entire present total amount of potash now produced in the United States is the plan of George E. Ford, president of the Utah Packing Co. and vice president of the Merchants' Bank at Salt Lake City.

Mr. Ford, who was in San Francisco recently in the interest of the Alunite company of Nevada, in making this announcement stated that \$1,000,000 will be spent in developing the potash deposits at Sulphur, Neb. A large plant for refining the raw material will be erected. San Francisco will be the main distributing point for the company.

### Big Percentage of Potash from Kelp

SIDNEY, Can.—J. MacDonald Fahey of the Canadian Kelp Products Co., who has worked for five years to establish the kelp industry, states that the present plant

can handle 125 tons of kelp per day. There is sufficient kelp in the company's beds at Sidney for their own needs and further to make possible the export of from \$10,000,000 to \$15,000,000 worth of potash annually.

The kelp ash which the company turned out last season was guaranteed to contain 30 per cent potash, but an analysis of a sample made up of pinches from each unit of the total shipment showed the presence of 41.77 per cent potash.

In experimental work the company had successfully produced from kelp, after the potash and iodine had been removed, leather of excellent quality, and had also obtained algin gum with which excellent waterproof materials have been produced. He asserts further that kelp after the potash and iodine have been removed is nutritious as cheese, and as it is practically odorless, tasteless and colorless, forms an ideal base for innumerable products.

What are you doing for the Red Cross now? One may both work and give—to give much is the least you should do.

### Protecting Nebraska's Potash Property

A BIG fight has been waged in Nebraska between the general public and certain corporations over the disposition of the potash lakes, from the fact that a portion of the permanent school endowment fund comes from this source. At the last legislature a measure was passed giving private individuals preferred rights in these lake deposits through the medium of questionable leases sanctioned by the state board. These leases were invalidated by the Supreme Court later, and the same interests are endeavoring to secure control of these deposits through subsequent legislation.

It developed that 227 leases had been issued by the State Board of Educational Lands and Funds, and notwithstanding strenuous efforts on the part of some members of the legislature it was voted to validate these leases. The claim was advanced that as practically all of the potash now used went for agricultural purposes in eastern states, Nebraska should sell its supplies to the highest bidders.



# Advertising Agricultural Limestone and Lime For Sale

The Three Steps of Successful Advertising—Campaign for an Association Outlined by an Advertising Expert—H. S. Butler, of the Mumm-Romer Co., Columbus, Ohio

**A** GLANCE AT THE FIELD possible for the sale of agricultural lime shows that the combined efforts of manufacturers and their efforts singly have barely touched the surface. It is a safe estimate to say that the agricultural interests of the state of Ohio demand at the present time a ton and a half of ground limestone at the least calculation per acre, and it is quite likely that these figures would be materially increased if there were some way of obtaining the actual needs of each farm.

Of the 24,105,708 acres of land comprising the farming territory of Ohio, 22,796,900 acres are in improved land. Allowing a ton and a half of lime to the acre, and thirty acres to the ear, we find that there is a possible consumption in this state of over 1,000,000 carloads. Assuming further that this amount of lime could be applied every three years, and we all know that the amount is ridiculously small, we find that the farmers of Ohio should absorb over 300,000 carloads a year.

## Convincing the Farmer

The next question that comes before us in a merchandising way is why this is not used. If lime undoubtedly does increase the yield per acre, there is some good reason existing for the small consumption of it. What is that reason?

First and foremost, the farmer is not yet convinced that he can get his money back by the use of lime. Second, he is not yet convinced that his land needs lime.

Once convince the farmer that every ton of agricultural lime used means a return of two dollars for the one he has spent and that practically all the land in the state needs that lime, and the present capacity of crushers could not begin to supply the demand.

How can we go about convincing the farmer?

## Need Something More Than Education

A great deal has been written on the subject by the experiment stations, a great many lectures have been delivered on lime, and all kinds of pamphlets have been circulated on the subject. They have made an impression, it is true, but it would require a level to discover where this impression is.

Why have these educational contributions failed to accomplish much? Simply because they have not been the kind of copy that impels action. A few years ago

farmers denied that lime would be of benefit. Once in a while some belated specimen of this kind is found now, but the great mass of farmers know perfectly well that lime is beneficial. They accept it as a fact, but not as a fact that applies very much to them, and they can read any amount of reports from agricultural stations without feeling the necessary desire to buy.

Their attention, to some extent, has been attracted to the uses of agricultural lime. It may have been that the second step of selling has been taken and that some interest has been aroused, but the third step necessary to any sale—the creation of the desire—has not made much progress, and the fourth step of the sale—the decision to buy—has hardly been touched.

The difficulty has been in the fact that, while these articles told their stories, they have failed to create the desire to apply their teachings in the individual case, nor can this desire be created by informative literature.

## Putting the Punch in Advertising

It would seem, therefore, that the object of the advertising of a Manufacturers' Association should be to create a desire to buy lime. If the manufacturers will forget for the moment that they would like to have inquiries, forget that they desire sales even, and direct a campaign toward creating the frame of mind in the farmer that will cause him to buy lime, they will cash in enormously as a result of the campaign.

If, however, the campaign is to be directed toward securing inquiries for distribution among manufacturers, or even toward immediate sales, the results probably will be disappointing.

It seems to me that what is needed is the kind of an educational campaign that shows the farmer just what can be done on his place with the use of agricultural lime, just what he must do and how he must do it, and just what he may expect as a result of doing it.

This is properly the kind of advertising that an association of agricultural limestone producers should undertake.

## Action Compelling Copy

To accomplish it in several states requires what we call **action compelling copy** circulated among the farmers of these states through mediums in which they have

full confidence. The only class of mediums that answer this description are the farm papers. A campaign directed toward selling the farmers on the virtues of agricultural lime in these publications would reasonably accomplish big results if it were carried out to its logical conclusion.

Three objects should be sought in such a campaign. The first, of course, is the arousing of such interest as will insure the purchase of more lime than has been sold heretofore. The second, the education of the farmer to the fact that he can use lime at nearly any time in the year, and that because of freight congestion and other reasons he should order his lime in the summer prior to the movement of grain and coal in the fall. The third is the effect of the organization of manufacturers, which I shall deal with later.

## What Good Advertising Copy Is

To accomplish the first part of the campaign it is necessary that the advertising tell what lime will do, and in this I fear that the Association will suffer much from over-statements in the advertising of various lime concerns. Lime is valuable, very valuable to the farmer, and in isolated instances it may double his yield of crops, but to advertise that lime will double the yield is unwise, because it would not do it in most cases.

I think that the copy should contain the statements of agricultural experiment stations as to what lime has done, and we think it would be well to have a few testimonials from farmers who have really gained much by the use of lime, which your agents ought to be able to get.

## Farmer Should Order Early

To accomplish the second point is to convince the farmer that he should order the lime at the earliest possible season, that it will not deteriorate if it is allowed to lie, and that the freight congestion and other reasons should cause him to have it at the earliest possible date.

The third object, the effect on the organization of manufacturers, is worthy of very serious consideration. In the first place, we believe that the manufacturer should adopt an emblem of some kind that should be on their billheads, on all sack lime and on all the literature. It should be so advertised as to make the farmer believe that this emblem assures him of a lime of a proper grade and of fair treatment, and

this assurance should be followed up by the most careful methods of business.

#### Appeal to the Pocket Book

The farmer should be taught that the Manufacturers' Association is seeking his interest as much as their own, and that in the present condition of the country, it is patriotic of him to raise as large crops as possible, and to that end he should use lime. But the main appeal, of course, should be to his pocketbook, and he should be led to believe that the manufacturers

are working with him in his own interest, and that their organization is existing largely for the purpose of stimulating the growing of crops.

We may look for two effects on the Association itself: First, the greater enthusiasm of its members when they see the effect of this advertising; second, a greater desire to stimulate this end of the business, and more snappiness in their own organization.

To accomplish this the Association itself

should be thoroughly acquainted with the merits of advertising. It is not to be expected that the Association's advertising of the right kind would result in very many inquiries, and it should not be judged on that basis. It will result in an increased use of lime—gradual at first, and gaining headway as the subject becomes better known to the farmers. It will result in the Association members having the choice in sales, if this advertising is properly written and backed up by proper business methods.

## Hydrated Lime History



### Fifteen Years of Progress Closely Associated With History of "Rock Products"

By J. Crow Taylor

**H**YDRATED lime has been actively before the public in this country just about fifteen years. Considerable interest had been manifested in it for several years prior to 1906, and it had attained enough prominence by that time that in sending out statistical inquiries in 1906 the U. S. Geological Survey made an attempt for the first time to secure data relative to the hydrated lime industry.

#### Thirty Plants at That Time

The result of this effort showed thirty plants making hydrated lime at that time: eight in Pennsylvania, eight in Ohio, two in Indiana, two in Georgia and one each in Alabama, Arizona, Connecticut, Iowa, Kansas, Maine, Michigan, New York, West Virginia, and Wisconsin. The total production for that year was 120,357 short tons which sold at an average price of \$4.15 at the kiln. The production of hydrated lime has steadily increased from that time on, and attained the half million ton mark about 1913, and also going above the two million dollars mark of total value at that time with 80 plants operating and an average value \$4.47 a ton. Meantime Ohio had become the leading state with twenty operations as compared to fourteen or fifteen in Pennsylvania which seems to have been a leader in the early production.

#### Co-incident History

The history of hydrated lime and of ROCK PRODUCTS is practically coincident, because one of the first discoveries made after this paper was established was an interest in the promotion of lime for fertilizing purposes, which led directly to pulverized lime, and eventually to hydration. Also the use of coal and modern ideas in lime burning generally came to be active in the industry about the same time.

Along the summer of 1902 the Seneca White Lime Co., of Fostoria, Ohio, which had been making a special study of lime for fertilizing purposes, got out some printed matter in which it told benefits of lime in specific instances of crop growing as

fertilizer, and which contained among other things the following paragraph:

"Having known for a number of years the good results to be obtained from the proper use of lime upon the land, it has occurred to us that the principal reason for its not having come into more general use is that, as generally used, it is a disagreeable and expensive commodity to handle, and that manufacturers in the Central States have had a more profitable market for their output.

The old way of hauling it out on land in lump and piling it in little heaps, covering each heap with earth, then waiting for it to slake before spreading was both slow and expensive. The other way of putting it into larger piles, covering it with earth and slaking it with water was slower and more expensive.

We believe we have solved the problem by grinding the fresh-burned lime. In this form it is easily handled and will keep longer without air-slaking than any other form. It is all ready to spread upon or drill into the land. It is thus allowed to slake in or upon the land, which gives the land the full benefit of the properties of the lime. In this form it can be shipped in car lots, in bulk, in bags or in barrels and in less than car lots in barrels only."

#### Invents Carburetion Regulator

About this time reports also came in of lime hydrating at a Philadelphia plant. Then along came Byron Eldred, a young engineer of Boston, who had some inventions for the regulation of combustion in lime burning developed out of a conception that coal might be used with slow liberation of heat units with great economy in burning lime, cement, brick, etc.

This young engineer in a visit to the editorial office of ROCK PRODUCTS, which was then located in Louisville, Ky., was the first to explain both in technical detail and in every day language the meaning of hydration as applied to lime. He was interested at that time in developing a process for hydration himself, and explained in every day language, that hydration consisted of adding to lime just enough moisture to reduce it to the stage where it was not hungry for more moisture, and not carrying it to the stage of

saturation where it would crystalize and harden.

#### Dates Back to 1902 or 1903

This was back in 1902 or early in 1903, approximately fifteen years ago. For fifteen years therefore the industry has not only been spreading, but the propaganda of hydrated lime has been sown broadcast until seemingly every one handling lime should be familiar with this product and its uses in every way.

It is difficult to determine with any degree of accuracy the relative amount of hydrated lime used for different purposes. The best figures available indicate that something like a fourth, or perhaps a little larger per cent of it, is used for agricultural purposes.

### Lime Exhibit and Meeting in New York

**T**HE AGRICULTURAL LIME BUREAU of the National Lime Manufacturers' Association is conducting an exhibit of its work at the National Milk and Dairy Farm Exposition at the Grand Central Palace, New York City, May 20 to 25.

This exhibit is a very interesting and extensive one from which, it is felt, both farmer and lime manufacturer will derive educational benefit.

On one of the days of the exhibit a meeting of all attending lime manufacturers will be held at the Grand Central Palace, for the discussion of various business and operating problems involving the production and delivery of agricultural lime, under the existing emergency. It is hoped by the bureau that the lime industry can, with the aid of the Government, produce and deliver the amount of this product that hereafter may be required for the improvement of soils, as well as for other agricultural purposes, all of which is so essential to the national defense.

The bureau has planned to make the week an "Agricultural Lime Week."



# Electrical Drive Installations in the Canada Cement Company Mill

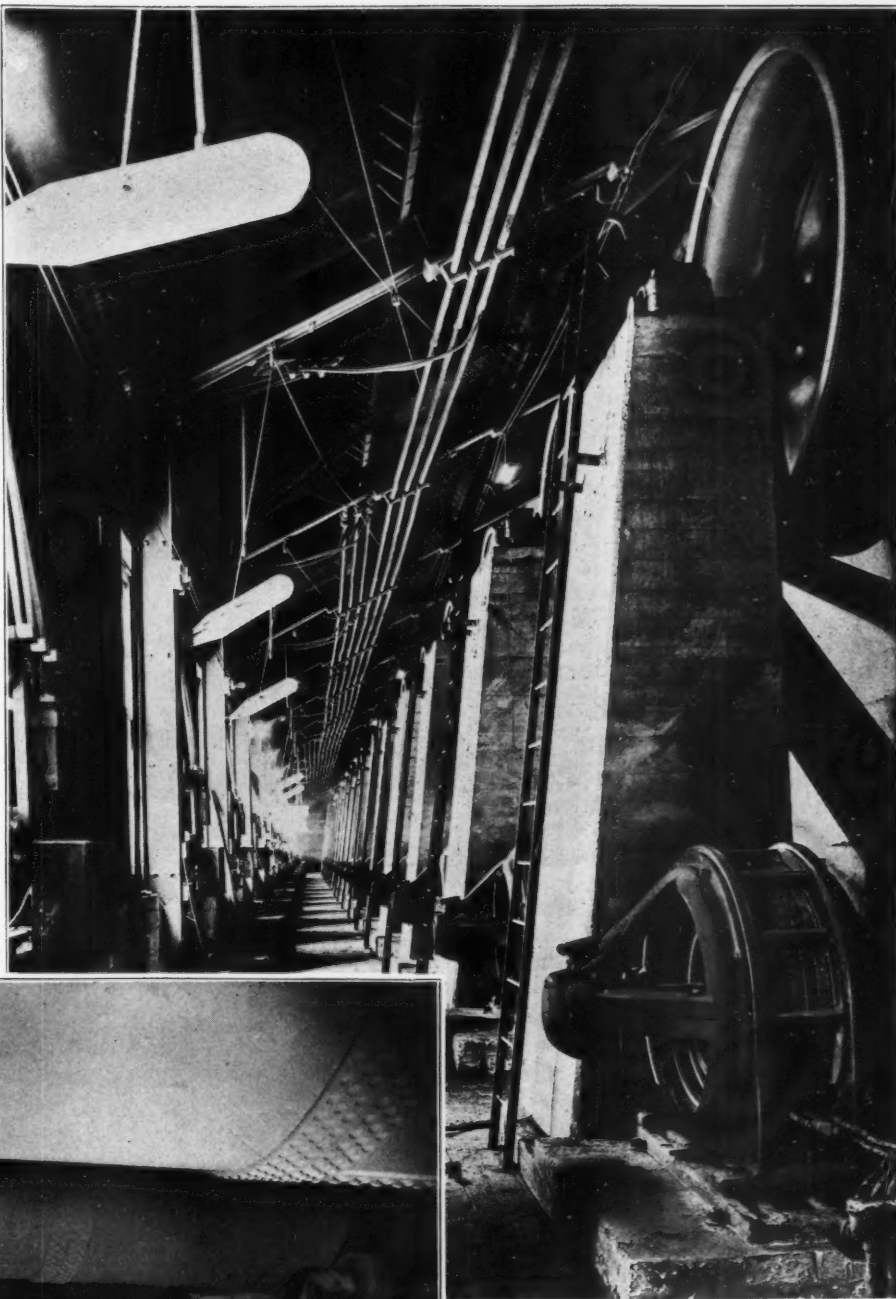
Operating Experience with a 14,000-hp. Equipment

THE PLANT OF THE CANADA CEMENT CO. at Longue Pointe near Montreal is operated by electric motor drive. This plant runs 24 hours a day 7 days a week. When running to its full capacity, the motors driving the grinding mills will probably be shut down for a few minutes only once a week, and for longer periods for repair to the mill probably once in six months. This means that the motors are practically running continuously for six months.

Elevators and conveyors are seldom shut down except to change motor bearings or to replace conveyor belts or screws. It is very important that these conveyors and elevators be kept running continuously, as generally a shutdown of one means a shutdown of a whole department, whereas the shutdown of an individual grinding mill is not of such importance.

The service by which the unfavorable operating conditions caused by the prevalence of dust are overcome is entirely satisfactory owing to the efficient inspection maintained by the electrical engineer, F. C. E. Burnett.

The equipment of this plant includes approximately 14,000 hp. of electric motors ranging in size from 250 hp. at 600 r.p.m. to 10 hp. at 1,200 r.p.m. The motors are of the squirrel-cage induction type belted to their drives. The only exception is in the case of the motors operating winches in the quarry, motors direct connected to pumps



1—Above; Nineteen 175 h.p. motors driving tube mills at 600 r.p.m.

2—At left; View of one of drives in kiln room where there are 17 kilns.

for water supply and motors operating a coal-handling bridge, these being direct-current running on 600 volts.

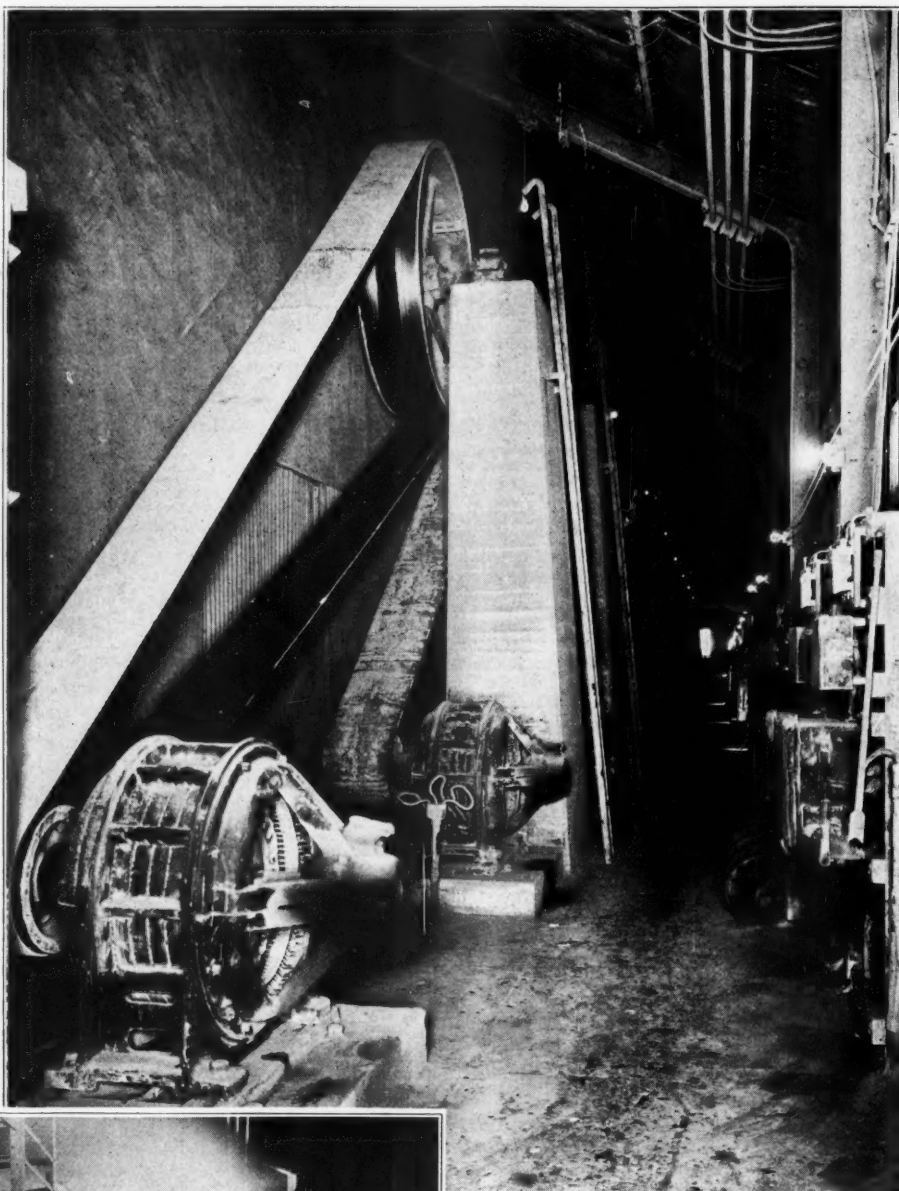
#### Substation Equipment

Power is received at 10,000 volts, three-phase, and is transformed to 600 volts in the sub-station. The equipment of the sub-station consists of six 2,000 k.v.a., 60-cycle, three-phase water cooled transformers. The maximum load on the sub-station so far has been about 10,000 k.w. A purely induction motor load of this character would result in a low power factor, and, therefore, to supply the necessary magnetizing current to correct this there are installed two 2,000 k.v.a. synchronous condensers operating at 600 volts. The sub-station contains the usual equipment of lightning arresters on high and low tension sides, and high tension switches controlling the incoming lines with low tension switch gear controlling some eighteen feeders on the low tension side.

#### Unit Drives

The drives are all by individual motors and this results in a remarkably good load factor being obtained. The load factor each month runs over 80 percent, this condition being ascribed to the individual drive feature. The motors are all controlled by N. R. compensators and all those of 35 hp. and over are equipped with overload trip coils operating through the no-voltage release on the compensator.

The conditions under which these motors operate is well worth attention. The large quantities of dust which is very hard, fine and penetrating make the cement mill one of the hardest of all plants on its motive power. As will be seen from the illustrations, the bearings have all special pro-



3—Above; Fifteen 100 h.p. motors driving kominuters (preliminary grinding machines) for grinding clinkers.



4—Sixteen 100 h.p. motors drive 16 pulverizers which grind raw mixture. Note the hoods over the motors

vision for keeping out dust, but in spite of all precautions that can be taken the dust certainly does find its way into the bearings and causes heavy wear. Notwithstanding this the larger motors are often run for twelve months without having the bearings rebabbitted. The smaller motors require this more frequently. Aggravating the effect of dust on the bearings tight belts have to be employed throughout, as the dust causes a considerable amount of slipping between the belt and the pulley unless run much tighter than would be considered necessary under ordinary conditions. Most of the pulleys are cast iron, it having been found impossible to make use of the good qualities of paper pulleys owing to the dust cutting them so quickly.

#### Squirrel-Cage Motors Satisfactory

Although the motors are all of the squirrel-cage type, they have, without excep-



tion, to start up against a heavy torque. In the case of tube mills and ball mills the starting torque actually exceeds the full load running torque by as much as 25 per cent. In spite of this fact no trouble has been experienced in starting up this load with the squirrel-cage motors.

An installation of motors working under such conditions can give satisfaction only if a rigid system of inspection is adopted. When the inspection system is faithfully carried out such an installation operates with remarkably little trouble. The Inspection Department's duties, while covering the entire electrical equipment of lighting and power, is more particularly concerned with the air gaps of the motors. These are checked regularly by means of the gages supplied with the motors, and a bearing is never allowed to go so far that the rotor rubs on the stator. Before the bearings reach the danger point they are changed.

Another minor matter which might be of interest to those operating motors under similar conditions is the question of dust collecting around the bearings themselves. If left undisturbed, the dust by capillary action soon removes the oil from the oil wells, therefore the inspection department is charged with the duty of cleaning the bearing housing at regular intervals.

Fig. 1 gives a view of the motor drives for the tube mills in the same building. There are 19 tube mills in this bank, each being driven by a 175-hp. motor at 600 r.p.m.

Fig. 2 is a view of one of the drives in the kiln room. There are 17 kilns in all, four of which are driven by one 100-hp. motor from a line shaft, the others having individual 35-hp. motors at 600 r.p.m., as shown in the view.

Fig. 3 shows the motors driving the kominuters (preliminary grinding machines) for grinding the clinker. There are 15 such machines in this building set in one row, each having one 100-hp. motor running at 600 r.p.m.

Fig. 4 shows part of an installation of 100-hp. motors running at 600 r.p.m., driving pulverizers, which are used to grind the raw mixture to a fine powder before it is burned in the kilns. There are 16 of these pulverizers with 16 motors mounted in two banks of eight each. In this case it will be seen that the motors have protecting hoods mounted over them to prevent dust accumulating.

It will be noted in views 1 and 3 that the motors are separately housed from the grinding machinery. This has resulted in much better operating conditions for the motors, and it will be noted that the protective shields are not found necessary in these cases.

The electrical equipment described in the foregoing paragraphs was installed by the Canadian General Electric Co.

## Value of Portland Cement Export

Exports of hydraulic cement are increasing steadily, according to statistics now being compiled by the bureau of foreign and domestic commerce of the department of commerce for the first eight months of the present fiscal year. Not only is the quantity exported increasing, but rising markets are making the value rise even more than would be caused by the heavier exports. For the eight months ended with February, 1918, shipments abroad totaled 1,818,061 barrels, valued at \$4,023,220, as compared with 1,510,788 barrels, with a value of \$2,466,824, during the corresponding period of 1917, and 1,761,064 barrels, worth \$2,322,920, in 1916.

With the exception of Peru, all countries to which we export cement are taking more than a year ago, the greatest increase being in exports to Cuba. While the figures for Panama show increased value, however, the increase is due to higher prices rather than a greater quantity, for the latter exhibited a slight falling off.

After decreasing from 78,823 barrels, valued at \$127,521, in 1916, to 58,606 barrels, worth \$124,386, in 1917, shipments to Mexico have increased this year to 70,890 barrels, with a value of \$187,867. Similarly, following a decrease from 251,526 barrels, worth \$289,129, in 1916, to 212,436 barrels, with a value of \$309,408, in 1917, exports to Brazil have increased to 339,965 barrels, valued at \$743,731.

Shipments to Panama show a steady decrease in quantity, which is partly offset, however, by increased prices. Shipments in 1916 amounted to 413,054 barrels, with a value of \$519,996; this fell, the following year, to 224,760 barrels, with a value of \$330,244, and the quantity again fell this year to 211,826 barrels, but the rising market brought the value up to \$412,828.

Exports to Cuba during the first eight months of the present fiscal year totaled 583,378 barrels, worth \$1,328,943, the largest amount shipped to any one country. This was a considerable advance over the exports of the same period of 1917, which totaled 455,131 barrels, with a value of \$747,023, and over those of 1916, which were 490,640 barrels, valued at \$667,641.

Peru, which in 1916 took 61,331 barrels, worth \$8,312, and in 1917, 63,025 barrels, valued at \$106,106, this year fell off slightly, taking but 45,451 barrels, with a value of \$97,620.

Shipments to unspecified countries have increased steadily. Beginning with 465,990 barrels, valued at \$646,321, in 1916, the exports increased to 496,830 barrels, valued at \$849,651, in 1917, and then to 566,551 barrels, with a value of \$1,252,221, in 1918.

## Portland Cement Association's Standards for Aggregates

**R**ECOMMENDED practice for concrete bridge construction of the Portland Cement Association is covered in a recent booklet issued by the association. The following paragraphs are of interest to crushed stone and gravel producers:

(a) **Fine Aggregate:** Fine aggregate should consist of natural sand or screenings from hard, tough, crushed rock or pebbles, graded from fine to coarse, with the coarse particles predominating. Fine aggregate when dry should pass a screen having four (4) meshes to the linear inch. Not more than twenty-five (25) per cent should pass a sieve having fifty (50) meshes per linear inch, and not more than six (6) per cent should pass a sieve having one hundred (100) meshes per linear inch. Fine aggregate should not contain injurious vegetable or other organic matter, as indicated by the Colorimetric Test, nor more than seven (7) per cent by volume of clay or silt as determined by washing the sand thoroughly in one hundred (100) per cent excess of water and allowing the silt to settle for one (1) hour. Field tests should be made by the engineer on the fine aggregate as delivered at different times during the progress of the work, and, if the above requirements regarding organic matter and silt are not fulfilled, the material represented by the samples should be rejected.

(b) **Coarse Aggregate:** Coarse aggregate should consist of clean, durable crushed rock or pebbles graded in size, free from vegetable or other organic matter and should be practically free from soft, flat or elongated particles. The coarse aggregate should be well graded from 1½ inches down (1 inch for reinforced concrete), not more than five (5) per cent passing a screen having four (4) meshes per linear inch.

## Oregon Plant Offers Cement at \$3.15

**O**SWEGO, Ore.—A contract to furnish 37,000 bbls. of cement needed in the construction of the great St. John's grain elevator was awarded to the Oregon Portland Cement Co. of Oswego last month by the Commission of Public Docks. The company's bid was \$3.15 a barrel with an allowance for returned sacks of 20 cents per sack. Three other bids were opened, each offering the cement at \$3.25 a sack with the 20 cent reduction.

## Cuban Cement Plant Now in Steady Operation

**B**OSTON, Mass.—Owing to minor adjustments of machinery, it took two or three weeks longer to get the Cuban Portland Cement Co. in actual operation than was anticipated at the first of the year. But these adjustments are now completed and the plant should be in continuous operation from now on. A recent cable to the Boston office stated that "One kiln and all machinery working satisfactorily."

### HOW MANY OF YOUR FRIENDS ARE IN THE ARMY?

**I**F a day's pay a month would save one life of the wounded of our boys in the trenches—maybe your son, your brother, a dear friend—would you hesitate to give to the humane work of the Red Cross at the several battle fronts of Europe?



# NEW MACHINERY EQUIPMENT



## Machines for Handling Stock Piles of Stone and Gravel

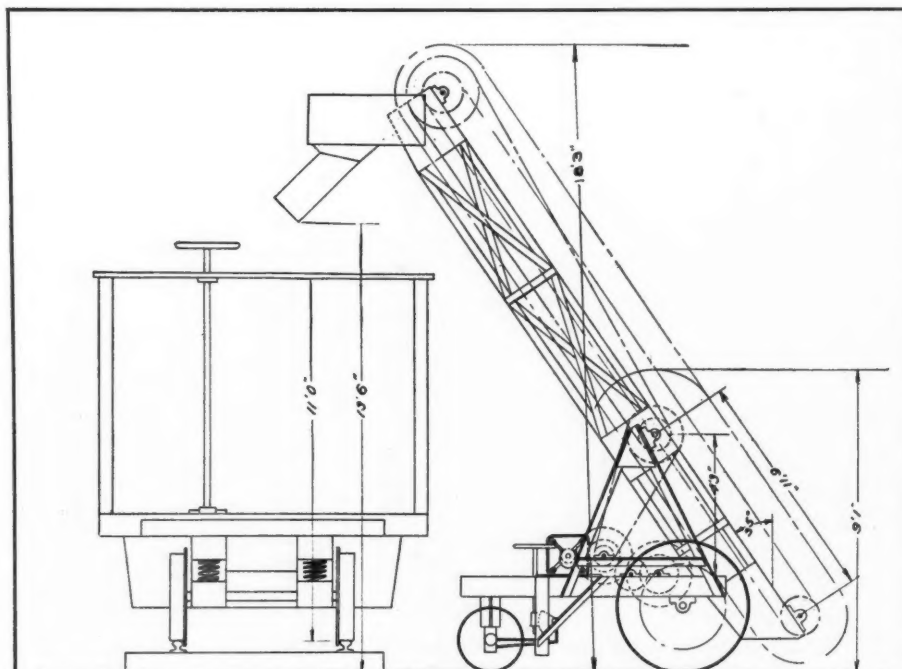
ONE OF THE BIG PROBLEMS of crushed stone and gravel producers is the economical stocking and rehandling of their finished products. The cost of bin construction makes this method prohibitive for storage in anything like the quantity necessary to meet the present intermittent car supply. Locomotive cranes are extensively used, but this is a large investment and not justified in the case of many small quarry operations.

A possible solution of the problem is in the adaptation of the portable-conveyor type of wagon loader. The accompanying illustrations are of the digging type of loader, made by the George Haiss Manufacturing Co., New York City. These loaders are provided with a crowding device, which one man can operate by means of a hand crank to push the elevator unit into the rock pile for distances of 30 in. without the necessity of moving the wagon wheels upon which the machine rests. This type of machine is propelled by hand cranking and for long distances it is hitched to a wagon or truck. For short movement the laborers take hold of the spokes of the wheel or the hand propelling crank on the side, and push the machine about. A self-propelling type is also built.

Such a machine is claimed to have a ca-



The Haiss digging type of loader operated by one man



The Haiss loader set to load a car from the stock pile

capacity of 1 cu. yd. per min. and to handle material at a cost of about 1c per cu. yd. It will load stone from a nearby pile to a railway car, but its reach is obviously limited. However, it is not beyond the range of possibilities that this loader may be developed a step farther and used in connection with a portable belt conveyor of adjustable length. Such a contrivance could be used to handle stone or gravel from a stock pile to railway cars 50 or 100 ft. distant at a cost which probably would compare favorably with that of a locomotive crane.

## Build Concrete Houses by New Method

YOUNGSTOWN, O.—The Unit Construction Co., St. Louis, has successfully completed the first of a proposed group of dwellings for the Youngstown Sheet & Tube Co., consisting of concrete, poured in parts which are assembled after setting, making the work of construction very rapid. The house contains two apartments, and seems to be entirely satisfactory. More of these dwellings are being constructed.



## Conveyor Belt Speeds Now Lacks Standardization

THIS is a time for standardization and for the compilation of positive data of all kinds. So one day recently at a gathering of the clans where a representative of a belting concern conspicuous in supplying belts for conveying purposes was present a little definite information was sought.

"What," was asked, "may be listed as the average or standard speed for conveyor belts?" The question was qualified by the explanation that the conveyor belts in mind were such as were used in conveying crushed stone, sand, gravel, clay, coal and similar heavy products which might be handled on a rather large scale.

The belting authority hesitated and stumbled a little and finally said from 200 to 300 ft. per min.

Then he got busy looking up records, and especially referring to memoranda on the back of photographs taken of conveyor jobs which they had equipped. There he found quite a wide range of speeds, varying all the way from 200 ft. up to 1,500 ft. per min.

Generally the conveyors with higher speeds were on inclines which involved a throw, while those of slower speeds were horizontal runs. Sometimes plainly a speed was influenced by the quantity to be moved within a given time and outside factors wielded enough influence to make the final conclusion somewhat vague and uncertain.

It was found that many conveyor belts were being operated at a speed of 500 ft., and plainly a range of from 200 to 1,500 is rather broad and loose data for this day of facts and figures of more definite character.

It is high time to determine what might be called a common speed, a speed at which under normal conditions the greatest measure of satisfaction and efficiency may be attained. Also, there is generally set forth a permissible range of variation for effective work.

It is time to compare notes with a view to developing more specific data of this character in connection with conveyor belts, especially those used in crushed stone, sand and gravel, so that the man who is figuring on installing new equipment may have something in the form of positive data that has been arrived at by actual experience to work from.

Here is a good subject for comparison of notes, for the conducting of experiments, that we may determine positively under what speed a conveyor belt of given size will render the most satisfactory service under stated conditions of work and material handled. Let's have some opinions.

## Concrete Barges for Ohio River Traffic

WHEELING, W. Va.—At a big river conference held here, the Liberty Transit Co. engaged the services of Robert

A. Cummins, engineer of the Cummins Structural Concrete Engineering corporation of Pittsburgh, to begin at once construction of self-propelled concrete Ohio river barges. Mr. Cummins promised to turn out one barge each week until a fleet is completed.

J. W. Johnson, assistant district engineer of the Portland Cement Association, of Parkersburg, attended the conference. Representing the Liberty Transit Co. were: J. C. McKinley, president, coal operator; I. M. Scott, Wheeling Steel & Iron Co.; Edward Hazlett, banker, and B. W. Peterson, banker.

Work will start as soon as possible. The barges will be operated from Pittsburgh to Cincinnati.

## Direct Heat Rotary Dryer for Limestone

THE rotary dryer illustrated on p. 16 of this issue, in the description of the plant of the New Castle Lime & Stone Co., is of the single shell type made by the American Process Co., New York City.

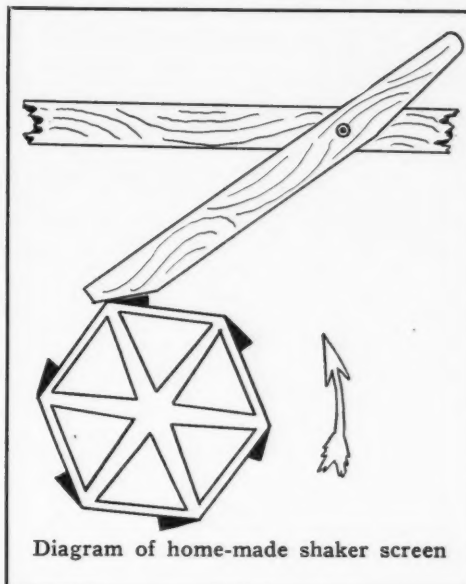


Diagram of home-made shaker screen

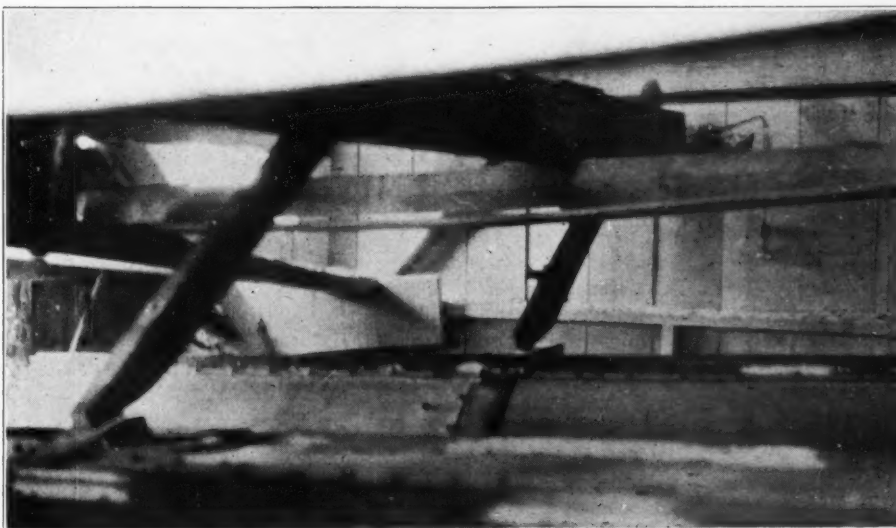
In this type the hot furnace gases come in direct contact with the material to be dried, as it moves continuously through the machine. The dryer consists essentially of a suitable furnace, in which the heat is generated by the combustion of solid, liquid or gaseous fuel, generally under forced draft, and a slightly inclined revolving steel cylinder through which the hot furnace gases pass, and in which the wet material is thoroughly agitated with these gases until the moisture is evaporated. The dryer shell has a series of heavy steel angles and shelves, riveted longitudinally to its inner circumference. These not only greatly increase the strength and rigidity of the cylinder but also serve to lift and shower the drying material through the hot gases as the drum is revolved.

The drying cylinder is encircled by two weldless rolled steel tires, securely fastened to same, which rest upon chilled and ground cast-iron carrying rollers. Rotation is usually imparted to the cylinder by the simple frictional resistance between the tires and the rollers upon which they rest, but sometimes through a heavy spur pinion meshing with a large spur gear ring encircling the drying drum. Various types of running gear and drive mechanism for supporting and rotating the drying cylinder are used depending upon the individual requirements.

## Home-made Shaker Screens

THE ACCOMPANYING ILLUSTRATIONS show a simple device used at the Marble Cliff Quarries Co., Columbus, Ohio, to screen finely ground agricultural lime stone. The screws are hexagonal, made of rectangular screen plates bolted to the structural framework. In revolving, wedge-shaped projections on the central frame cause a lever arm to rise and drop back against the screen frame, thus jarring or shaking the whole screen.

The screens are home-made, as is also the shaker device.



Home-made shaker screen in use at the Marble Cliff quarries

# Activities in Business Organizations

## Convention of the Building Industries

THE American Institute of Architects has called a meeting of the various professions, trades and industries identified with the building business, to be held at the Engineering Societies' Building, New York, June 7.

The immediate purpose of the meeting is a conference to consider what can be done to organize the entire building industry and adapt its operations to war-time conditions.

It is essential that the industry shall have a definite understanding of the needs and the purposes of the Government in order that it may co-operate with the Government to supply those needs to the full extent of its ability.

### Should Make Clear the Needs

It is also desirable that it may make clear to the Government the needs of the industry and to gain its co-operation—as far as the exigencies of war may permit—in the conservation of the industry.

The importance of making the gathering a thoroughly representative one is accepted by all parties in interest. It should include both national and large local associations—architectural and engineering professions, material manufacturers and distributors, contractors and labor interests—so that the industry may profit by a complete interchange of views. As whatever action may be taken will affect all, it should spring from united council.

### Co-Operation Pledged

Active co-operation of many interests is already pledged, giving assurance of a meeting truly representative of every section of the country and of every branch of the industry.

Such a meeting gives promise of such a complete interchange of opinions and statements of facts and conditions as clearly to warrant the attendance of every man interested in getting a nationwide view of the conditions affecting building industry.

## Important Changes Made in Traylor Company

S. W. TRAYLOR has resigned the presidency of the Traylor Engineering & Manufacturing Co., of Allentown, Pa., and W. J. Roberts has been elected in his stead by the board of directors.

Other changes effected were the election of Mr. Traylor to the chairmanship of the board of directors, and Harry Battersby, who was previously treasurer of the company, was chosen as first vice-president and treasurer. F. R. Crispen, secretary, was retained in his present position, and

H. L. Miller and Richard Bernhard were added to the directorate.

In addition to the chairmanship of the board of directors of the Traylor Company, Mr. Traylor still occupies the positions of president and general manager of the Traylor Shipbuilding Corporation of Cornwells, Pa., and president of the Cement Gun Co., Inc., both of which are subsidiaries of the Traylor Engineering & Mfg. Co.

### Roberts' Steady Promotion

W. J. Roberts has been connected with the Traylor Company for twelve years, having advanced from step to step through its entire organization.

Mr. Miller, has, in addition to being made a director, been appointed general manager, for which he is exceptionally qualified on account of his long experience as general superintendent and assistant general manager of the Power & Mining Machinery Co., of Milwaukee. Mr. Bernhard occupies the position of chief engineer, the same that he held with the Power & Mining Co.

### Have Built Additions

The Traylor Company has, within the past year, completed very extensive additions to their plant, the new machine shop being considered one of the model buildings of this type in the country. In addition to the manufacture of mining and crushing machinery, the company have recently taken on the manufacture of Marine engines and boilers and have achieved the honor of completing the first engine for the new Mercantile Marine for the U. S. Shipping Board.

The company proposes after the war to continue in the manufacture of ships and shipping machinery, and due to the close affiliation to the Traylor Shipbuilding Corporation will be able to turn out complete ships.

## Ohio Sand and Gravel Executive Officers

GREENVILLE, Ohio—The list of officers of the Ohio Sand & Gravel Producers' Association is as follows:

President—F. D. Coppock, President The Greenville Gravel Co., Greenville.

Vice-President—R. E. DeVille, The Lake Sand and Gravel Co., Toledo.

Secretary-Treasurer—E. S. Warner, The Akron Gravel and Sand Co., Akron.

Executive Committee—E. A. Evans, The Zanesville Washed Sand and Gravel Co., Zanesville; J. M. Truby, The Pelee Island Sand and Gravel Co., Cleveland; J. T. Adams, The Concrete Materials Co., Columbus; Frank Tejan, The Wiggim Crushed Stone and Sand Co., Dayton; Harry Donnelly, President The National Sand and Gravel Producers' Association, Cincinnati.

## Indiana Dealers Define Word for Manufacturers

FORT WAYNE, Ind.—President John Suelzer of the Indiana Builders' Supply Association, addressing the recent quarterly meeting of the association at Fort Wayne, defined a building supply dealer as one who carries a complete stock of everything in supplies used by the community in which he does business. The carrying only of one line does not constitute a dealer, he argued, as one line does not furnish the necessary volume of business. He demanded that manufacturers besides investigating the financial standing of a prospective dealer, should also determine whether the prospect is regularly engaged in the business and has the proper facilities for handling the business.

J. H. Panabaker offered a motion supporting the president's contention, and calling upon the manufacturers to act on the suggestion. It carried. J. W. Potter's motion to submit the proposition to the National Builders' Supply Association also carried.

Among the guests at the meeting were Edward K. Cormack, former president of the National Association; Charles T. Harris, Cleveland, secretary of the National Association.

## Concrete Ship Building Plants for Chicago

THOMAS CAREY, president, and Simon O'Donnell, vice-president of the Co-operative League, comprising all the building trades of Chicago, have written to R. J. Wig, head of the concrete bureau of the Government shipbuilding department, that Chicago would make an ideal location for concrete ship construction.

"We can build concrete ships more expeditiously, cheaply, and efficiently than any other place in the country," they wrote. "The government can procure sites for such construction without cost from the sanitary district, located in the heart of the greatest industrial center in the world. We have on hand in Chicago's manufacturing district 1,110,000 bbls. of cement, every pound of which can be moved to the sites by water."

## Detroit Builders Plan Annual Outing

DETROIT, Mich.—The annual outing of the Builders' and Traders' Exchange of Detroit will be held at Put-in-Bay, Tuesday, June 25. Special plans are being made by the management of the Hotel Victory to take care of the excursionists.



# Action Near on General Roadbuilding Program Under U.S. Approval

Director of Public Roads Plans Administration Committee to Formulate Policy to Push 1918 Federal, State and Local Projects—A. P. Sandles Reports

**T**O THE CRUSHED STONE INDUSTRY:

In Washington, last week, I had conference with Hon. Logan Waller Page, Director of the U. S. Office of Public Roads. He is anxious to go on with the road program and a Road Committee may be agreed upon consisting of a representative of:

- First. War Department
- Second. Treasury Dept.
- Third. Agricultural Dept.
- Fourth. War Industries Board
- Fifth. Fuel Administrator

If this committee agrees upon a road policy for the season, the questions of Finance, Fuel, Transportation, Military and Food Necessity will be taken care of for road building and road repair throughout the nation.

There is little use for Mr. Page to try to carry out any program unless all the above depart-

ments are in accord, as any one of them could block the game.

Official Washington, more than ever before, sees the importance of a vigorous road program, consistent with war necessity. The biggest men in governmental circles now have this question under consideration.

If this plan is carried out by Mr. Page, it is possible that some projects heretofore rejected may be approved. The plan will also include forward movement on state, county, and township improvements, as well as those to receive Federal Aid.

Road Builders and Road Users are under obligations to Mr. Page for his persistent efforts to work out the above commonsense plan, which if adopted will insure a 75 to 90 per cent program for 1918.

A. P. SANDLES, Secretary.  
National Crushed Stone Association.  
Columbus, Ohio, May 14, 1918.

## Cement, Essential Industry, Seriously Hampered by Lack of Coal

**C**EMENT MANUFACTURE is listed by the War Board as one of the essential industries, and that industry is now reduced at a period when the nation is confronted with what is considered the greatest crisis in its history to 50 per cent normal production by lack of necessary fuel supply. The cement industry is a large consumer both of anthracite and gas coal. Statistics gathered from 15 of these mills in Pennsylvania would indicate annual average consumption by that industry of all trades of coal aggregating 1,897,200 tons.

Complaints are being received by Government from all these mills, concerning supplies of coal, in which they declare unreservedly that they will not be able to make specified deliveries under Government contracts unless fuel requirements are better provided for. One concern specifically advises federal authorities that it has contracts now "for 200,000 barrels of cement, and unless there is relief we will fall down on same," says the Philadelphia correspondent of the Boston Bureau.

An Allentown cement company, which requires 30,000 tons of gas coal monthly in

order to fill army, navy and other contracts, reports that owing to "coal scarcity last half of March our operations were only 20 per cent of normal and in last six months we have produced but 40 per cent of output recorded in six months previous. During past three months we have lost 200 carloads of coal, or approximately 10,000 tons, by confiscation."

Another Allentown cement plant reports the "situation in the last three months compelled us to suspend operation almost completely, we having been operating but 8 per cent until a few days since. Now we are operating at about 60 per cent of capacity." Still another Pennsylvania cement company says: "We should have received 16,800 tons of gas coal in the past three months to April 1; instead we received 6,000 tons. We are in very bad condition on our contracts which are 95 per cent priority work. Our operation is less than 50 per cent capacity."

A fourth plant was closed from middle of December to Feb. 26 because management found it impossible to secure coal. In its statement this company says: "We

have one Government contract to deliver 1,000 tons of cement a month, and when running at capacity need 5,000 tons of coal a month. If our production is reduced to 70 per cent for lack of fuel our manufacturing cost will increase about 36 cents per barrel."

In connection with coal shortage in this state last winter, much criticism was heard because so much coal was sent to the Northwest and Canada. Of total movement to that market, started underway early last summer, the Pennsylvania Railroad alone, it is understood, carried 7,000,000 tons. Pennsylvania and other railroads urged, as they are urging now, that New England, New Jersey and eastern districts of New York and Pennsylvania should receive fuel supplies before fall traffic rush sets in.

Shipments of anthracite to Canada now are only by special permit and those in control of the situation it is expected will guard against repetition of heavy shipments to the Northwest, idea being to first take care of eastern states.

# Must Include "Suspended Investment"

Cost Item Frequently Overlooked, Not Only by Building Material Dealers, but by Producers as Well

**D**URING THE PERIOD which we are now passing through, the cost item "Suspended Investment" probably is as important as any, owing to the fact that it is so easily overlooked. The amount of money required to conduct a building supply business today has at least been doubled; not only has increased cost of materials doubled the material on hand inventory, but the time that material is en-route makes the turnover a greater factor in ascertaining true cost.

Cement, lime, and in fact all of the building commodities that formerly were en-route only three or four days, are now in a good many cases requiring that many weeks, consequently the dealer taking advantage of his discount pays for material ten days from date of invoice, and in most cases is paying for material before he receives it.

Material sold F. O. B. cars of course is treated by the dealer the same as the manufacturer, he simply passes it along to the contractor, who he expects to pay ten days from date of invoice; but on material sold through the yards, etc., this suspended cost absolutely is up to the dealer unless he has figured his selling price accordingly.

While this is true of the material coming in, it is also true of the returning of empty sacks to the mill. This is an expensive item which has had many discus-

sions both on the side of the dealer and manufacturer, but it is nevertheless a fact that when the dealer receives sacks from the contractor, they are counted and credit issued immediately for all good sacks. Usually these sacks are allowed to remain at the warehouse until sufficient amount, either to make up a carload, or substantially good shipment, is ready. By the time the cement company receives this shipment of sacks it is necessary for them to recount them and issue credit, which is usually delayed. If the manufacturer cannot expedite the credit or payment for sacks returned by the dealer, it is very essential that the dealer should extend the true loss in this transaction and see that the selling price contains this additional cost.

Dealers should, from a patriotic standpoint, see that cloth sacks are preserved more carefully both by themselves and contractors, as the loss on cloth sacks at this time is a loss to the entire community. A ten-cent charge on cement sacks and fifteen on plaster sacks does not in any way take care of the actual cost of these

containers. At this time I understand the cost is between twenty-three and twenty-five cents.

Another important item to take into consideration is accepting small orders for material to be delivered over an extended period, when in turn the dealer is not able to secure protection from the manufacturer. There is absolutely no rule in cost accounting that takes care of an item of cost on such a risk, as it is purely a gambler's chance that the dealer is taking. At the present time the manufacturers of plaster in accepting orders, state that price shall be charged that is in effect at time of shipment.

The building supply business today requires a most careful scrutiny of these suspended items as the World War has inflicted unusual and severe conditions on both the manufacturer and dealer.

I am absolutely convinced that the manufacturer is helpless at this time in making the rules and regulations which appear very severe, but it is up to us to educate the consumer to these conditions so that we may advocate a "Cost Plus" proposition on as much work as possible, as it is as difficult for the contractor to give a figure for work when he does not know what material will cost, as it is for the dealer to set a selling price on material for future delivery.

By Wm. T. Rossiter  
President, Ohio Builders' Supply  
Association

## Federal Building Projects Growing in Magnitude

War Department Planning for a Long War—Construction Work of All Kinds Reaches High Figure Throughout Country

**N**EW YORK—That the War Department is planning for a long war is evident from the ever-increasing program of building operations by the Government, which includes accommodations for troops, storage facilities, training camps, hospitals and other construction projects not only in the vicinity of New York and on the sea coasts but also in the interior states as well.

### To Spend \$25,000,000 on New York Harbor

The War Department now is planning to spend upward of \$25,000,000 in order to increase the storage facilities of New York Harbor.

This great project involves the construction of mammoth warehouses of steel and reinforced concrete on the property adjoining the Bush Terminal in Brooklyn, adding approximately 6,000,000 square feet of storage space to that already under

Federal control or at present under construction in that vicinity. In addition this project will involve the construction of four great piers of concrete and steel. All of this work will be under the direction of Major-General Goethals, Director General of Storage.

### \$29,000,000 for Building Equipment

A total of approximately \$29,000,000 in addition will be expended by the War Department for the installation of equipment of various kinds in the 118 buildings and eight piers recently acquired by the Government in the West Section of the Bush Terminal Area, in Brooklyn.

During the past month the sum of \$1,250,000 was requested for the construction of hospital buildings on Ward's Island. This project is for the use of the Navy Department which will also have charge of the construction of the hospital buildings to be

erected at Pelham, N. Y., for which the sum of \$900,000 has been asked of Congress.

### Another Shipbuilding Plant

The Carolina Shipbuilding Co., a subsidiary of the George A. Fuller Co., obtained a contract for the construction of a large shipbuilding plant at Wilmington, N. C.

The Building Industries of New York have inaugurated a survey of the available warehouse space in the five Boroughs of Greater New York, and a similar survey of apartments and tenements which will be made with the co-operation of the Real Estate Boards, Boards of Trade and Chambers of Commerce of the respective boroughs and the work will be pushed with the utmost dispatch in order to present accurate information at the earliest possible date to proper Government departments at Washington.



# Government and Business Solve Problems

## Return-Loads System and Rural Express Lines Operate

THE Rural Motor Express and the Return-Loads system is in operation in several parts of the United States according to the Highways Transport Committee of the Council of National Defense which urges upon the State Councils of Defense the promotion of such lines to connect especially the farms and the cities and thus expedite the production of foodstuffs. The plan enables the farmer to ship into the city his products every day and receive in return from the city machinery, fertilizers and other supplies.

A plan so successful between farm and shop as the Transport Committee implies should be equally successful between shop and factory and between producers of raw material and factory and shop.

The development of the Rural Motor Express, the Highways Transport Committee hopes, marks the beginning of a system of universal transportation over all the main highways.

One of the main advantages of the rural express system is that it reduces labor. In some places the hauling formerly done by five men with wagons is now being done, at many times the speed, by one man with a truck.

## Big Steel Plant for Pittsburgh

PITTSBURGH—Rumors which have been in circulation for the past few months to the effect that "something big" was going to be "pulled off" in the Pittsburgh district, have come to a head and a big government munitions plant, costing \$70,000,000, will be erected on Neville Island. Preliminary work has already been started.

Neville Island is situated in the Ohio river, about five miles from the center of the Pittsburgh District and directly opposite Bellevue, Avalon and Elmsworth on the right bank of the river and opposite McKees Rocks and Coraopolis on the left bank, and is seven miles long and one mile wide.

A number of years ago the American Steel & Wire Co. erected large blast furnaces at the head of the island and contemplated a vast extension.

However, the consolidated and formation of the United States Steel Corporation prevented these plans from being carried out.

The blast furnaces erected at that time and now in operation produce 550 tons of steel a day.

It is said that there will be 20,000 to 25,000 men employed in the plant when completed.

There will also be hundreds of men working on the erection of the plant and

these men and their families will all have to be housed.

The housing proposition has not been given publicity as yet, but there is no doubt that this matter has received proper attention.

The authorities discourage the building of houses on the island, as it is contemplated that in time the entire island will be used for the plant, yards, etc.

Thousands of houses must of necessity be erected in the vicinity of the plant in the near future.

## Utilizing Idle Labor

THE United States industries are deeply interested in a scheme to secure labor for industrial plants throughout the country through the use of the draft, which has been submitted to the President by officials of the War and Labor departments. Complaints have reached Washington in great numbers that the drafting of men for the National Army has left plants in important industries very short handed. The plan submitted would fill these places with men not yet to be called to the colors. It would also eliminate the industrial "slack-er."

The proposition provides for a survey of the lower sections of class 1 and later classes to identify idlers or those getting their living from undesirable or "harmful" pursuits. Notification would be served on these men that unless they found employment in useful industry their status would be changed and they would be inducted into the military service immediately.

The principal increase to the labor supply would be from the lower sections of class 1, which is practically deferred classification. With the addition of those who have reached the age of 21 since the passage of the selective draft act, class 1 will include not less than 2,200,000 men. Even should the proportion of those who are not engaged in productive work be small, the aggregate will run into the hundreds of thousands.

The plan is not designed to interfere at all with any non-essential industry. Such industries may be affected to some slight extent, but officials believe such injury will be offset many times over by the resulting national good to be obtained from the augmented labor supply and the greatly increased production of essentials.

It is planned to utilize the existing local draft boards virtually as employment agencies for their districts. Accurate records would be kept as to the vacancies existing in the neighborhood, and when a man was informed that he must seek a useful occupation he would be told just where such a man as his questionnaire shows him to be was needed.

## Essential Building Work Is on Increase

PRESENT day building construction no doubt represents to a greater degree than ever before imperative work—housing for war workers, factories for war material and supplies, schools for children in new industrial towns, theaters, etc.

The April building, as indicated by the permits issued in the principal cities, shows expansion, and this means therefore that essential construction work is increasing. This necessary work, one of the main auxiliaries in winning the war, will probably continue to expand, for construction work has been seriously neglected on account of alleged high costs, for perhaps two years.

The resources of the country have increased enormously since the summer of 1914, but buildings have not kept pace and the dearth has now become so great in many places that increased rents and privations of various kinds are entailing a multifold distress.

Official reports of the building permits, issued during April in 116 principal cities of the United States, as received by the American Contractor, Chicago, total \$51,296,161, as compared with \$85,902,006 for April last year, a decrease of 40 per cent. This decrease, while decisive, is the least for the calendar year to date.

By a like comparison January permits decreased 46 per cent; February, 44 per cent; March, 55 per cent.

## U. S. Makes Labor Survey

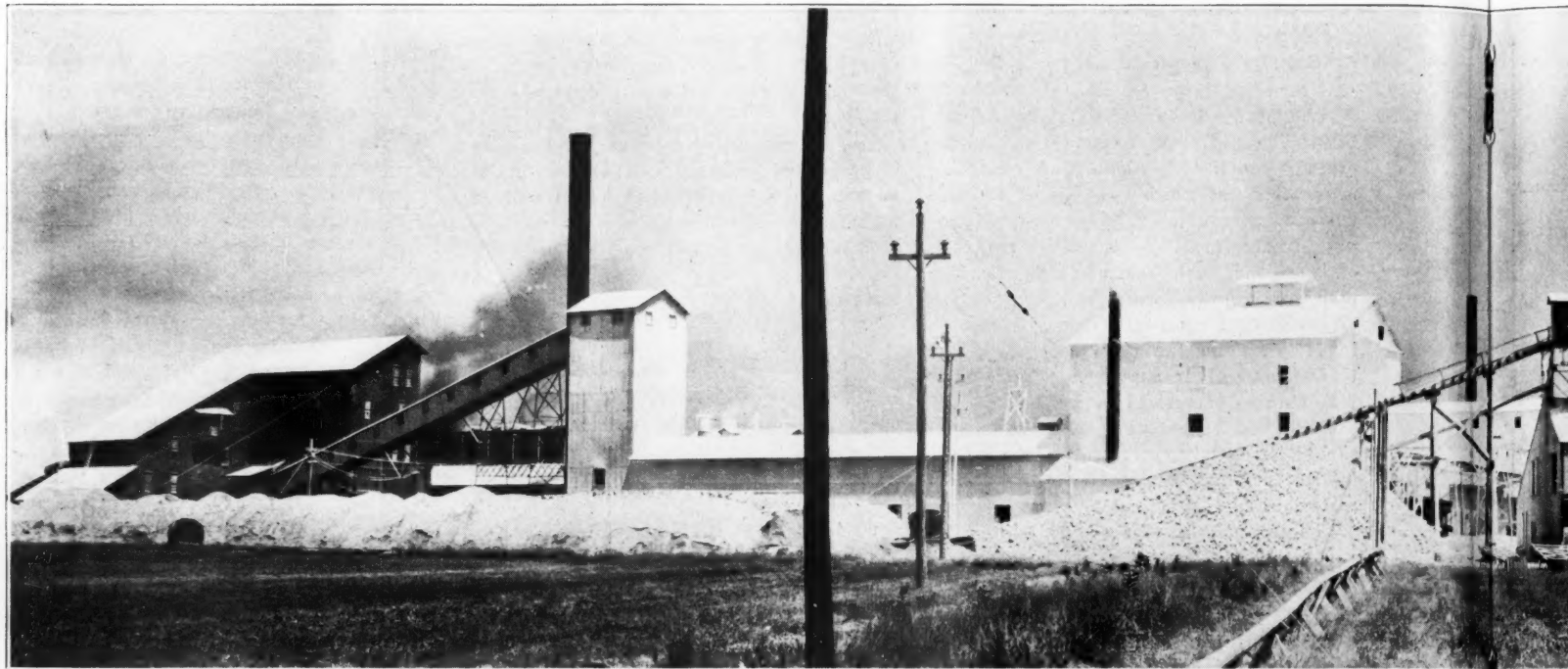
WASHINGTON, D. C.—A survey just completed by the United States Employment service shows that many workers in the building trades are now idle in some cities. The survey shows that during the week of April 14 there was a surplus of workers in the building trades in 33 cities. Conditions were reported normal in 34, and there were shortages in four cities. The demand is greater for skilled mechanics, 28 cities having a shortage and 32 being normal, nine a surplus.

## Thousands Crowd in But Building Lags

WASHINGTON, D. C.—Despite the fact that the population of Washington has been increased by many thousands during the past few months, and that the demand for homes was never so great as at the present time, figures compiled by the building inspector for the District of Columbia show that construction work has decreased rapidly.

A serious problem faces families unable to buy the house they are living in because there are hundreds of people now coming to Washington who, when unable to rent a house, buy one.

# Kelley Island Company Now Operating Thirteen



View of the White Rock plant in Ohio, one of the thirteen great institutions owned by the Kelley Island Lime and Transport Co.

**T**HE Kelley Island Lime & Transport Co. was organized in the year 1885 by Caleb B. Gowan, who was the first president, and was organized for the purpose of burning lime, crushing flux stone and quarrying riprap for harbor and breakwater work along the Great Lakes.

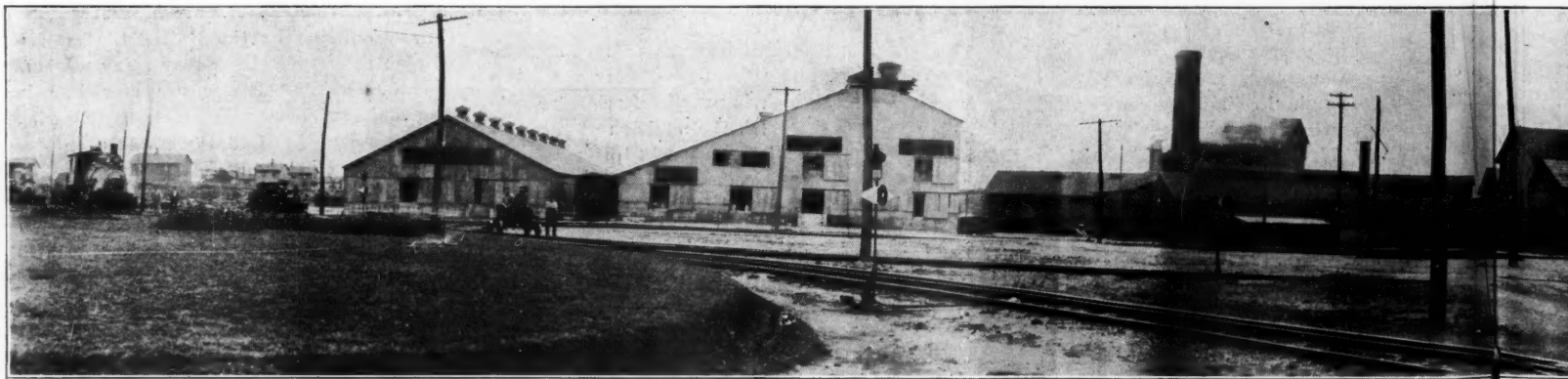
The original plant consisted of 10 kilns

located on Kelleys Island, Ohio, which lies about twelve miles west of Sandusky in Lake Erie, and separated from the main land by the channel between Marblehead and Kelleys Island, Ohio. From a small plant of 10 kilns this company has rapidly increased in growth until at the present time they are operating 13 plants with a

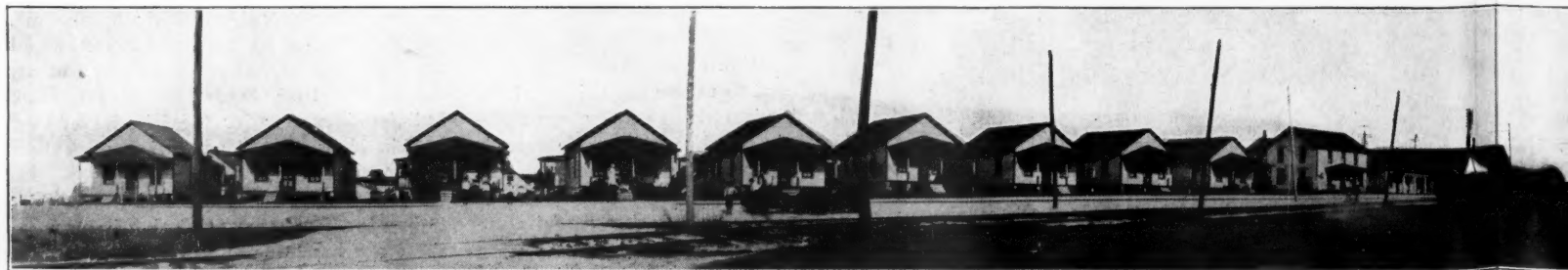
total of 204 upright or shaft kilns and three 8x150-ft. rotary kilns.

With the starting of the Buffalo plant, the various plants of the company are now geographically situated to serve all the territory east of the Mississippi bounded by the Great Lakes on the north and extending east to the Atlantic Coast.

**I**N a later issue of Rock Products the new Kelley Buffalo plant will be described



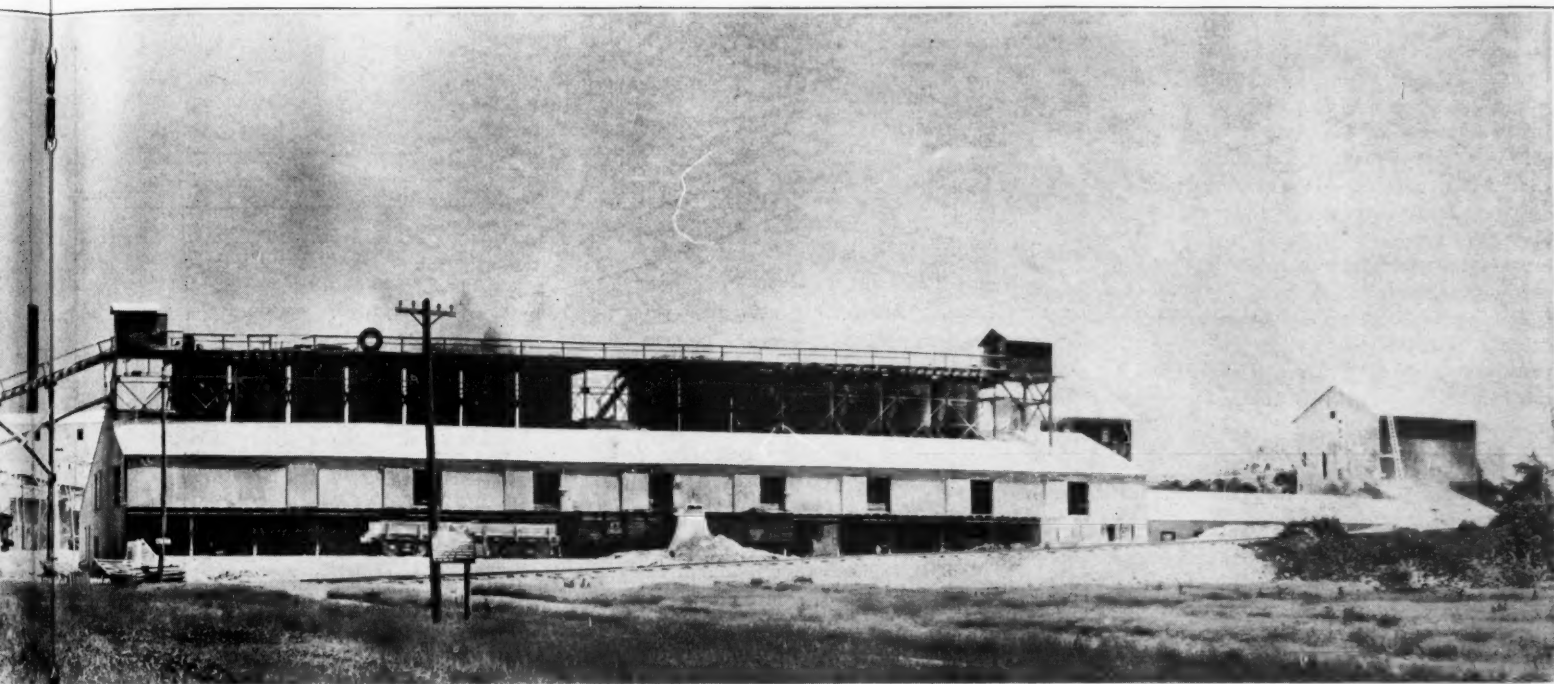
Panoramic view of the big plant at Marblehead, Ohio; note the neat lawns on the grounds.



Row of company houses for employees at the Marblehead plant, Marblehead, Ohio. The work of the land is shown in the background.



# Seventeen Lime Plants East of the Mississippi River



Kelley Island Lime and Transport Co.; the quarry which is not shown in the picture is at the left of the buildings

In a later issue of Rock Products the new Kelley Buffalo plant will be described

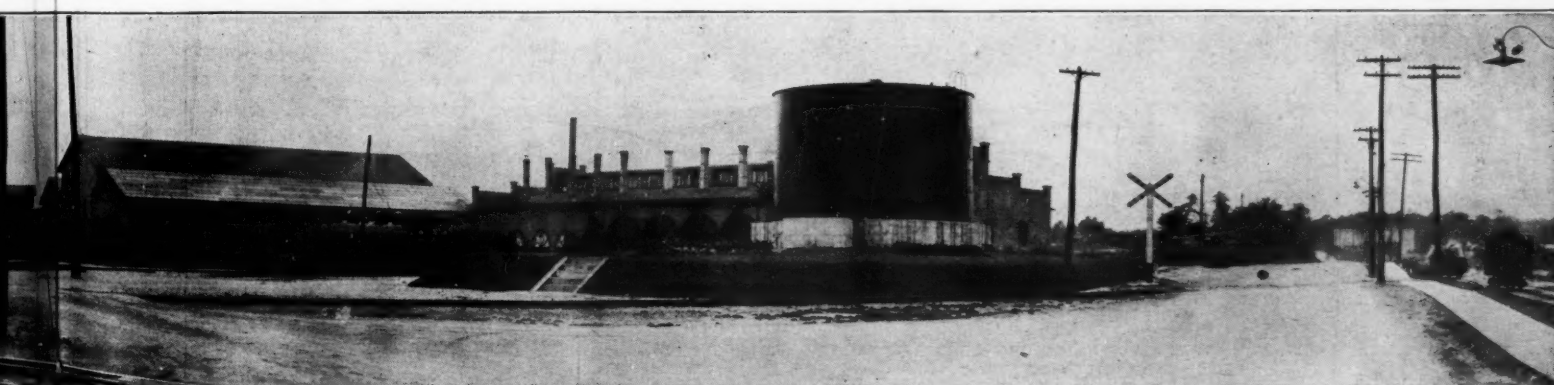
These plants are situated as follows: Huntington, Ind., Marion, Ohio, White Rock, Ohio, Genoa, Ohio, Tiffin, Ohio, Marblehead, Ohio, Kelleys Island, Ohio, Gibsonburg, Ohio, Lucky, Ohio, Sandusky, Ohio, Rogers City, Mich., Martinsburg, W. Va., Buffalo, N. Y., Dover Plains, N. Y.

With the completion of the present plans,

the Kelley Island Lime & Transport Co. will have a total capacity of 36,500 tons of flux, open hearth and kiln stone per day, or 10,950,000 tons per year and 2,350 tons of calcined lump lime per day or 700,000 tons per year, which would be equal to 7,000,000 bbls. of calcined lump lime.

In addition to this enormous tonnage,

the company will have a capacity of 1,250 tons of ground limestone per day, or 375,000 tons per year at its Marblehead, Ohio, Dover Plains and Buffalo, N. Y., plants. These figures are based on a 300 working day per year, although the kilns are run 365 days per year, but allowing for ordinary repairs and relining of the kilns, a



The neat lawns on the premises and the flower beds surrounding the tank



Work of the landscape artist is shown in this picture also. The handsome building at the right is the hospital

safe basis for figuring production is on a 300-day year.

For the manufacture of agricultural ground limestone and lime at Marblehead, the system is somewhat the same as at the Buffalo plant, to be described in Rock Products in a later issue. In addition they have 36 upright kilns and one 8 by 150 ft. rotary kilns for calcining lime.

The Marblehead Department is the largest single department of the company and has what is considered the largest and finest body of limestone in the world. Here they have a large 6x7-ft. Edison roll, which crushes the stone at the rate of 750 tons per hour.

At the Marblehead Department is located a fine new hospital which the company erected three years ago and here all the injured employees are sent for treat-

ment in case of accident. This hospital is entirely fireproof throughout, modern in every way, having the very latest equipment for the handling of all injured employees and the company's physician and nurses are in attendance day and night.

The photographs on this page, of the interior of the hospital, showing departments with special apparatus, operating rooms, and the clean sunny bed room, give some idea of the thoroughness with which the institution has been equipped for the personal comfort of patients and for the care of those requiring surgical attention.

The Dover Plains plant, which is located on the Harlem branch of the New York Central Railroad about seventy miles northwest of New York City, has good shipping facilities into New York City and

the whole eastern seaboard. At this plant agricultural ground limestone, hydrated agricultural lime, Masons hydrate and finishing hydrate are made.

All of the thirteen plants which the company is now operating are in charge of competent superintendents who have had years of experience in the lime and stone business, everyone of whom gives the manufacture of all the products of the Kelley Island Lime & Transport Co. his personal supervision. In addition to this supervision, the company has located at their White Rock, Ohio, plant a large and fully equipped laboratory, which is presided over by a capable chemist of years of experience in both the lime and cement practice. All samples are sent from the different departments to this laboratory, where analyses and reports are made daily.



Scenes of the interior of the hospital at the Marblehead plant, with an exterior view in the upper left hand corner



# The Rock Products Market

## Cement Makers and U. S. Agree on Prices—Lime Market

NEW YORK—Sharp wrenching of building material price tables in favor of both the consumer and the building material distributor are reported in The Dow Service Daily Building Reports.

Perhaps the most dominant feature is the announcement of the final arrival at a price adjustment between the Government and the Portland Cement manufacturers of the Lehigh Valley and Hudson districts. This quotation has been placed at \$1.75 for Lehigh Valley or Zone 1 production and \$1.85 for Hudson Valley cement. These levels represent an advance of 45 cents a barrel over the quotations formerly made on Government orders, base Lehigh, prior to the development of higher cost of manufacture since this country went to war a little over a year ago. The new prices are 15 cents below the mill quotation for commercial business.

Simultaneously with this announcement comes word out of both districts that the coal situation is becoming easier and the threatened restriction of output does not now promise to be quite so acute.

### Much Cut Stone in N. Y.

What was considered a forerunner of a plan to conserve basic building materials developed in the cut stone trade when it was revealed that farsighted distributors had been systematically bringing to this market large quantities of building stone so as to insure operators on institutional alteration work or high-grade private work that could go ahead on private capital, of an abundance of practically normal-priced building material. Today there is piled up in this city and still coming in, large quantities of ordinary building stone, there being probably more free material of this character on hand here than there has been at any time in recent years. The railroads are co-operating in rushing stone here, but are not now handling the lighterage. So a ten-cent advance is noted.

### Lime

Another department that has begun to feel some of the pressure of Government business is lime, an increasing quantity of it now being called for in southern ports from eastern sources. This is being used partly in the housing developments in Maryland, Philadelphia and southern New Jersey.

Price advances are reported in Newark

## Wholesale Prices of Crushed Stone

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

### Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
<b>EASTERN POINTS:</b>						
Auburn, N. Y.....	.60	1.00	1.00	1.00	1.00	1.00
Hagerstown, Md.....	1.35	1.35	1.35	1.35	1.35	.....
North LeRoy and Akron, N. Y.		1.00 all	sizes including R. R. ballast			
Syracuse, N. Y.....	.60	1.00	1.00	1.00	1.00	1.00
Snowflake, W. Va.....	1.00	1.00@1.25	1.25	1.25	1.00	.90**
<b>CENTRAL:</b>						
Belvidere, Ill. ....		1.00 per ton, all sizes or quantity				
Davenport, Iowa .....	1.00@1.15	1.25*	1.25*	1.15*@1.25*		
(Quarries near Davenport)...	Dust .50	1.15@1.35	1.10@1.25	1.00@1.10	.95@1.00	.90@1.00
East St. Louis (vicinity)...	1.50†	.90@1.10	1.00@1.10	1.00@1.10	1.00@1.10	1.00@1.10
		(Railroad ballast considerably cheaper)				
Eden and Knowles, Wis.....	.80	.80	1.00	1.00	1.00	1.00
Illinois, Southern .....	1.25	1.25	1.25	1.25	1.25	1.10
Lannon, Wis. ....	.90@1.00	1.00@1.05	1.00@1.05	1.00	1.00	1.00
Lewisburg, Ohio .....	.50@.75	.80@1.00	.80@1.00	.80@1.00	.80@1.00	.80@1.00
Mt. Pleasant, Iowa.....	1.50	1.10	1.10	1.10	1.00	
	Rip	Rap .85 cu. yd., 2240 lbs.	Rubble 1.00 cu. yd.			
Cleveland, Ohio .....		Avg. price, all sizes f.o.b. cars 1.70 net, ton				
Cincinnati, Ohio .....		Avg. price, all sizes f.o.b. cars 1.32 net, ton				
Columbus, Ohio .....		Avg. price, all sizes f.o.b. cars 1.22 net, ton				
Detroit, Mich. ....		Avg. price, all sizes f.o.b. cars 1.22 net, ton				
Ft. Wayne, Ind.....		Avg. price, all sizes f.o.b. cars 1.27 net, ton				
Joplin, Webb City, Carthage Mo.		1.25@1.50				2.00
Mankato, Minn. ....		1.00				.80
Muncie, Ind. ....		.90 to 1.00 ton, all sizes				
Toledo, Ohio .....		Avg. price, all sizes f.o.b. cars 1.42 net, ton				
<b>SOUTHERN:</b>						
Brooksville, Fla.....				2.15		
El Paso, Texas .....	.95	.95	.95	.95	.95	
Fort Springs, W. Va.....	1.00	1.00	1.25	1.25	1.00	.90**
Irvington, Ky. ....	.50			.65	.65	
<b>WESTERN:</b>						
Kansas City, Mo. ....	.30	1.05	1.05	1.05	1.05	1.05
Blue Sprgs. & Wymore, Neb.	.15	1.25	1.25	1.15	1.10	1.00
<b>CANADA:</b>						
Dundas, Ont. ....	.50@.85	.85\$@1.05	.85\$@1.05	.85\$@1.05	.70\$@.85	.70\$@.85
Hull, Quebec .....	1.25	1.90	2.00	1.75	1.50	1.25

### Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Baltimore, Md.—Trap	1.00	2.00	1.90	1.75	1.75	1.50
Duluth, Minn.—Trap	.65@.75	1.25@1.35	1.25@1.35	1.15@1.25	1.15@1.25	1.15@1.25
Glen Mills and Rock Hill, Pa.	1.05	1.35	1.55	1.55	1.60	1.30
Dresser Junction, Wis.	.50	1.25	1.25	1.00	.90	
New Haven, Conn. (vicinity)	.80	1.30	1.25	1.20	1.10	
Oakland, Calif.—Trap		1.50 for all sizes				
Philadelphia, Pa. (vicinity)	1.25	1.75	1.50	1.25	1.25	1.25
‡R. R. ballast.						

### Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Little Falls, N. Y.—Syenite	.60	Other sizes 1.00, including R. R. ballast				
Hendlers, Pa.—Quartzite	.75	1.00	1.35	1.00	1.00	1.00
Boulder, Col.—Sandstone				2.00*		1.75*
Mt. Pleasant, Ia.—Basalt					.95	.85†
Atlanta, Ga.—Granite	.35	1.75	1.60	1.50	1.50	1.45
Baltimore, Md.—Granite	1.00	2.00	1.90	1.75	1.75	1.50
Stephensburg, Ky.—Basalt						
*Cubic yard. †Agri. lime. ‡R. R. ballast. \$Flux. †Rip Rap.						

in almost every commodity. Portland cement at Newark yard is now (May 13) \$3 a barrel and \$3.15 delivered; Rosendale, \$2 as against former price of \$1.60 and a delivery price of \$2.15. Lime has advanced from \$1.90 to \$2.60 yard, and \$2.75 delivered.

### Agricultural Limestone Wholesale at Plant, per Ton

East St. Louis, Ill. (vicinity)	\$1.50
St. Louis, Mo.	1.70
Cambria, N. Y.	2.50@3.00
Stephensburg, Ky.	1.50

## New Rules on Imports of Lime and Cement

WASHINGTON, D. C.—Under new regulations just issued by the War Trade Board, the importation of a number of commodities will be forbidden after May 13, 1918, except as specifically provided. These provisions authorize the importation of the specified articles only when the goods originate in one of the countries designated in the particular provision covering such article, and do not permit the importation of goods originating in other countries, but coming through such designated countries.

Licenses for the importation of lime will be granted only for shipments coming from Canada.

Licenses for cement for building purposes and stone and manufactures thereof will be granted only for shipments coming overland, or by lake from Canada, or coming overland from Mexico.

All outstanding licenses to import the above articles from any country from which, under the announcement, licenses for such article will not be granted, are to expire and become void unless shipment is made on or before May 13.

## Ohio River Concrete Work May Be Held Up

WASHINGTON, D. C.—A delegation of leading contractors, handling construction work on the Ohio river, recently urged the Senate Committee on Commerce to hold up work on Ohio locks and dams, on the grounds that such work is not of a war emergency nature.

It was alleged that in order to carry on the work without loss it would be necessary to increase the contracts by about \$2,000,000, as the contracts were accepted in peace times, when labor and material conditions were normal. Col. Henry Newcomb, of the army engineers, stated that the contractors had been hard pinched, and needed relief. Members of the Senate Committee favored holding up the work for the period of the war. As the work is not of an emergency character, and a few dams and locks which are nearly completed, could be finished, indications are that the protest will meet with favor.

The work will probably be postponed instead of the Government increasing the contract price, and a \$5,000,000 appropriation for Ohio river work will probably be stricken out, as there was about \$2,000,000 left out of last year's appropriation.

## Miscellaneous Sands Per Ton at Plant

Bowmanstown, Pa.—Fine white silica .....	\$2.10
Dundee, Ohio—Glass sand .....	2.25@3.00
Morgantown, W. Va.—Glass sand .....	3.25
Warwick and Sugar Grove, Ohio—Glass sand .....	2.25@3.00
Zanesville and Layland, Ohio—Moulding, fine, \$1.75; coarse .....	1.25

# Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

## Washed Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, 1/4 inch and less	Gravel, 1/2 inch and less	Gravel, 1 inch and less	Gravel, 1 1/2 inch and less	Gravel, 2 inch and less
<b>EASTERN:</b>						
Bowmanstown, Pa. ....	Concrete sand, 1.20; plastering, 1.25; stuccowork, 1.50					
Buffalo, N. Y. ....	1.00 cu. yd., all sizes					
Buffalo, N. Y. (Niagara River) .....	.80	.75	.70	.70	.70	.70
Philadelphia, Pa. ....	.85@	.95	.....	1.15	1.00	.....
Portland, Me. ....	.....	.50	1.55	1.45	1.35	1.25
<b>CENTRAL:</b>						
Barry, Pike Co., Ill. ....	.60 to .80, all sizes					
Barton, Wis. ....	.75	.70	.....	.70	.70	.70
Chicago ....	.93@1.03	.83@ .93	1.00@1.20	.83@ .93	.83@ .93	.83@ .93
Chicago, Ill. ....	.....	.....	.83 to .93, all sizes	.....	.....	.....
Chicago switching district ..	L 1.37 1/2*	1.25*	1/4" 2.50*	1.25*	.....	1.25*
.....	B 1.05*	.....	3/8" 1.50*	.....	.....	.....
Cincinnati, Ohio ....	1.10	1.05*	Bank and lake sand, cu. yd. 2500 lbs.	Bal., 3000 lbs.	1.05	1.05
Des Moines, Iowa ....	.40@ .75	.50	F. O. B. track at point of delivery.	.....	1.00@1.25	1.00@1.25
Elgin, Ill. ....	.....	.50	1.25@1.50	1.25@1	.50	.50
Hawarden, Cherokee and Doon, Iowa ....	.40@ .60	.40@ .60	.....	.90@1.10	.....	.85@1.00
Indianapolis, Ind. ....	.50	.50	.....	.65	.....	.65
Indianapolis, Ind. ....	.67 1/2*	.67 1/2*	Concrete mix, .55.	1.00*	.81*	.81*
Joplin, Webb City, Carthage, Mo. ....	.85	.50	.....	.....	.....	.....
Janesville, Wis. ....	.50	.50	.....	.....	.....	.....
Mason City, Ia. ....	.50@ .60	.40@ .50	1.00@1.20	1.00@1.20	.90@1.20	.90@1.20
Milwaukee, Wis. ....	.....	.90	Railroad ballast and road gravel	.40@ .50	.....	.....
Moline, Ill. ....	.50	.50	1.00	.90	.90	.80
Ottawa, Yorkville and Oregon, Ill. ....	.50@ .60	.50@ .60	.75	.60@ .75	.60@ .75	.60
Rockford, Ill. ....	.55@ .60	.55@ .60	.....	.60@ .70	.....	.....
Sabula, Ia. ....	.....	.55	1.25	.....	.....	.....
Saginaw and Bay City, Mich. (vicinity) .....	.35	.35	1.25	1.10	1.10	1.00
South Bend, Ind. ....	.40	.40 to .50 ton frt. to Saginaw and Bay City.	.50@ .70	.50@ .60	.50@ .60	.50@ .60
St. Paul, Minn. ....	.60@ .80*	.60@ .80*	1.80@2.00*	1.15@1.35*	1.15@1.35*	1.05@1.25*
Terre Haute and Wabash Valley District .....	.75	.75	.75	.75	.75@ .80	.75@ .80
Montezuma, Covington, Ind. ....	.....	.75 for all sizes.	.....	.....	.....	.....
Winona, Minn. ....	.60@ .90	1.00@1.40	1.00@1.40	.95@1.25	.95@1.25	.....
<b>SOUTHERN:</b>						
Knoxville, Tenn. ....	.85	.85	1.25	1.25	1.25	1.10
Lake Weir, Fla. ....	.50	.....	.....	.....	.....	.....
New Orleans, La. ....	.75*	.75*	1.35*	1.35*	1.35*	1.35*
Pelzer, S. C. ....	.....	.....	1.35*	1.35*	1.35*	1.35*
<b>WESTERN:</b>						
Atchison, Kan. ....	.....	.....	1.40	.....	.....	.90
Denver, Colo. ....	.....	.50*	.....	.....	.....	.....
Kansas City, Mo. ....	.....	.....	Carload lots, .40 at plant	.....	.....	.....
Lincoln, Neb. (carloads) ....	.52	.52	1.80	1.80	.....	1.80
Lincoln, Neb. (wagon lots) ..	1.00@1.20	1.00@1.20	2.60	2.60	.....	2.60
Niles, Cal. ....	.60@1.00	.50@ .80	.60@ .85	.50@ .80	.50@ .80	.50@ .80
Pueblo, Colo. ....	.60@ .80	.....	.....	.....	1.00@1.50	.....
Saratoga, Santa Clara Co., Cal. ....	.50@ .60	.50@ .60	.....	.....	.....	.....
Seattle, Wash. ....	1.00	1.00	1.75	1.00	.....	1.00
Vancouver, B. C. ....	.....	1.00*	1.25*	1.00*	.....	1.00*

## Bank Run Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, 1/4 inch and less	Gravel, 1/2 inch and less	Gravel, 1 inch and less	Gravel, 1 1/2 inch and less	Gravel, 2 inch and less
<b>EASTERN:</b>						
Attica, N. Y. ....	.50	.50	.50	.60	.60	.60
Portland, Me. ....	.....	1.50* cu. yd.	.....	.....	.....	.....
<b>CENTRAL:</b>						
Barton, Wis. ....	.40	.....	.....	.....	.....	.....
Ottawa, Oregon and Yorkville, Ill. ....	.45	.50	.....	.....	.....	.60
Sabula, Ia. ....	.....	.55	.....	.....	.....	.....
Des Moines, Ia. ....	1/10" sand, 30% gr., .60	1/4" sand, 50% gr., .75, all washed	.....	.....	.....	.....
Indianapolis, Ind. ....	.67 1/2*	.....	.....	.....	.....	.....
Janesville, Wis. ....	.40@ .56	.40@ .50	1.10@1.50	1.10@1.25	1.10@1.25	1.00@1.10
Minneapolis, Minn. ....	.....	2800 lbs., 2600 lbs., 2600 lbs., 2600 lbs., 2600 lbs.	.....	.....	.....	.....
Moline, Ill. ....	.70	.....	.....	.....	.....	.....
Portsmouth, Ohio ....	.65	.....	.....	.....	.....	.....
Saginaw & Bay City, Mich. (vicinity) .....	.50*	.50*	.75*	.75*	.....	.....
South Bend, Ind. ....	.25@ .35	Add .44 to .50 ton frt. to Saginaw and Bay City.	.....	.....	.....	.....
Terre Haute, Montezuma & Covington, Ind. ....	.50	.50	.....	.....	.....	.60
Wabash Valley District .....	.75	.....	.....	.....	.....	.....
Winona, Minn. ....	.....	Pit run gravel under 2-in., .60@.90.	.....	.....	.....	.....
<b>SOUTHERN:</b>						
Calaveras, Texas ....	.40@ .50	.....	.....	.....	.....	.....
Howcott, La. ....	Running 50% plus on rock content on 1/2" screen, .55@.65	.....	.....	.....	.....	.....
Knoxville, Tenn. ....	.85	.85	.....	.....	.....	.....
<b>WESTERN:</b>						
Atchison, Kan. ....	.....	.....	.....	.....	.....	.50
Denver, Colo. ....	.....	.....	.30*	.....	.....	.....
Pueblo, Colo. ....	.....	.60 unscreened	.....	.....	.....	.....
Saratoga, Santa Clara Co., Cal. ....	.40	.....	.....	.....	.....	.40
.....	*Cubic yard.	.25 millrun; screened .50.	B. bank.	L. lake.	.....	.....





# Passed By The Screens



## Personals

**Harry L. Davis**, of Syracuse, N. Y., has been elected a director of the Victoria White Granite Company, with plants at Keene, N. H., and Wilford, Mass.

**W. Jess Brown** became district engineer of the Portland Cement Association May 1, in charge of the Atlanta, Ga., office. He succeeds C. N. Wiley, who resigned to re-enter the employ of the Standard Portland Cement Co. at its Leeds, Ala., plant. Mr. Brown has had long experience in the southeastern states in work similar to that of which he will have charge at Atlanta, having been associated with the Dixie Portland Cement Co.

**Wilbur A. Nelson**, formerly assistant of the Tennessee Geological Survey, is now State Geologist, having been elected by the commission last month. He takes the place made vacant by the death of Doctor Purdue last December. Mr. Nelson graduated as bachelor of science from Vanderbilt University in 1910, and soon thereafter became assistant in the Tennessee Survey. For three years he held this position making special investigations in building sands, caves, clay and minerals generally. He then spent a year in graduate study at Leland Stanford University, graduating as master of science in 1914. During the two following years he was geologist for the N. C. & St. L. railway and more recently held a responsible position with the Paga Barite Mining Co., of Georgia. Dr. L. C. Glenn of the Vanderbilt University, who had been acting state geologist, turned over the office to Mr. Nelson May 1.

## OBITUARY

**Major Edward E. Hartwick**, president of the Hartwick Lumber Co., of Detroit, has died in France in the service of his country. Memorial services were held May 12 in the Woodward Avenue Methodist Church, Detroit, under the auspices of the Detroit Commandery, No. 1, Knights Templar. Members of the Builders' and Traders' Exchange attended the service.

**Robert Brinton Hill**, formerly of the Portland Cement Association and recently of the British Royal Flying Squadron, has been killed in France. Of the sixty-four blue stars on the association's service flag there now glistens one of gold. Mr. Hill, following his graduation from the Towne Scientific School, University of Pennsylvania, joined the association forces June 8, 1914. He had charge of the accident prevention work of the association in which he did most creditable work, earning for him unstinted praise of the association. He enlisted with the flying squadron September 5, 1917.

## Sand and Gravel

Nassau Sand & Gravel Co. has increased its capital from \$10,000 to \$200,000.

Broadway Sand, Gravel and Art Stone Co., of Cleveland, Ohio, has increased capital from \$35,000 to \$70,000.

The Northern Gravel Co., of Barton, Wis., which had been closed down during the overhauling of its refinery has resumed operations.

The Wabee Gravel Co. at Milford, Ind., is now handling over 500 tons of gravel a day, and is employing a large force of men.

The West Jersey Sand and Supply Corporation, Philadelphia, Pa., have let a contract for the construction of sand storage and slag bins and a one-story frame building. Total loss about \$5,500.

After having suspended operations for nearly four months, the Katterjohn Construction Co., which operates a big stone quarry at Cedar Bluff, Ky., has announced that work will be resumed soon.

Otis Cawthon, of Pittsfield, Ill., has purchased the sand and gravel rights on the Frank Carrell farm north of town. The material is of especially fine quality and Mr. Carrell expects to develop the business.

Work has been started on the plant of the Eau Claire Sand & Gravel Co. on their property near the Milwaukee right of way at Eau Claire, Wis. The contractors will soon begin work on the five big concrete bins, 16 feet in diameter and 6 feet high. A well 16 feet in diameter will also be sunk. Besides this there will be built a power plant, conveyor and other mechanical apparatus. The company recently acquired a large area of land, all sand, a sand peculiarly adapted for blasting and for which there is a ready and profitable market. This sand will be dug, washed and screened and shipped to various foundries in the country.

## Quarries

The Baltes Stone Co., of Fort Wayne, Ind., it is reported, has filed a preliminary certificate of dissolution.

The quarry and stone crusher just west of Petoskey, Mich., has resumed operations after the winter shut down.

The Cincinnati Quarries Co., of Cincinnati, has opened a sales office at Washington, Ohio, with G. F. Potter in charge of the office.

The Supervisors of Upper Salford township have purchased a quarry at Salford Station, Pa., for the purpose of furnishing crushed stone for the township.

A. H. Burkholder, proprietor of the Quarryville (Pa.) lime and stone quarries, is continually making improvements and additions. He recently purchased two cars to convey the stone from the quarry to the kiln.

The only quarry operating on the Oakland side of the San Francisco bay is the large quarry in the very heart of the city of Oakland, owned by the Oakland Paving Co. This quarry has been in operation about 50 years and produces a very fine quality of hard blue trap rock.

The New York State Industrial Commission recently held a hearing in the Cahill Building, Syracuse, N. Y., on the proposed new code to safeguard the employees in quarries in New York State. The proposed code was indorsed by those present, and will be finally passed upon at a meeting to be held in New York City at an early date.

A wage increase of 20 per cent has been granted by the stone-cutting plants in Montpelier, Vt., giving employees 70 cents an hour additional. The increase affects the entire Barre granite district, including Barre, Waterbury, Northfield and West Berlin, where upwards of 5,000 men are employed. The quarry workers also secure increases.

## Cement

With an ample supply of coal on hand and regular deliveries assured, the cement mills in the Lehigh (Pa.) region are resuming operations full-handed.

Superintendent W. R. Dunn, of the Vulcanite Cement Co., Easton, Pa., has announced an increase in wages of 4 cents per hour and piece workers in proportion.

The West Coplay mill of the Lehigh Portland Cement Co. has resumed and the company now has three mills working, namely, Fogelsville, mill A and West Coplay.

The Alpha Portland Cement Co., Easton, Pa., has announced an increase of four cents an hour to all hourly men and a corresponding increase to all pieceworkers. This is the sixth increase since January 1, 1916, and the rates are double those existing at that time.

Government agents commandeered all the loaded box cars and a part of the cement of the Henry Cowell Lime & Cement Co.'s main plant at Cement, Contacosta County, Cal., for the constructive work in the aviation field at Mills Station, Sacramento. Even a half car of cement on a siding maintained for the use of contractors by the Cowell company was seized.

Ralph Law and other Iowa capitalists asked through William Clemens, secretary of the Mobile (Ala.) Chamber of Commerce, permission recently to add \$1,000,000 to the \$400,000 capital stock of the Portland Cement Company at Demopolis, Ala. Under the war finance corporation act, all companies desiring to increase their stock over the \$100,000 mark, must have the consent of the government. It is their purpose to make at Demopolis the cement which will be used by the government in its contemplated concrete ship-building plant at Mobile.

The following have been elected directors of the Phoenix Portland Cement Co. at Nazareth, Pa.: J. W. Walker, Port Kennedy; George W. Laub, Nazareth; J. C. Parsons, Phoenixville; George A. Cooley, Easton; C. L. McKenzie, Pittsburgh. The following officers were elected to serve until April, 1919: President, J. W. Walker; first vice-president, George W. Laub; second vice-president, J. C. Parsons; treasurer, A. W. Nash, L. E. Reed, Philadelphia. A special meeting of the stockholders will be held on June 19 to vote on a proposed increase of the capital stock of the company and for or against an issue of \$300,000 in capital stock, 7 per cent accumulative.

## Potash

According to an announcement by the Department of the Interior, potash lands are being offered for lease under the terms of the law enacted recently. The tracts covering eight square miles lie in the Searles Lake section of San Bernardino and Inyo counties of California and are large sources of commercial potash.

The Potash Reduction Company, of Holland, has purchased the J. E. Rice ranch, southeast of Alliance, Neb. This ranch contains approximately 10,000 acres of land, including some very fine hay land and a number of potash lakes on which the Hoffman company held leases prior to the sale.

## We Must Not Forget Nor Neglect

**L**ABOR, willing and industrious, by every individual: Thrift, high-minded and economical in every personal application: Conservation, wise and purposeful everywhere, are demanded of us all in this day of danger from Autocratic domination, greed and spoliation—these things we must not forget—must not neglect.



# Passed By The Screens



## Incorporations

C. R. Clinton, of Elmhurst, N. Y., is a director of the Keystone Gypsum Fireproofing Corporation, of Manhattan, formed with a capital of \$150,000.

Buckeye Gravel Co., Cincinnati, Ohio; capital, \$15,000. Incorporators, E. T. Paul, James R. Davidson, Fred W. Cornelle, J. W. Rhu and George Wm. Doran.

American Mica Corp., Newton, Mass.; \$200,000. Directors: Herbert L. Barrett, president; Floyd G. Blair, 84 State street, Boston, treasurer; and Geo. K. Gardner.

Le Mars Gravel Co., of Le Mars, Ia.; capital, \$600,000. Incorporators, A. C. Johnston, F. A. Kenyon and C. R. McCutchen. To produce sand, gravel and rock.

Spencer Quarry Co., Spencer, S. D.; capital, \$50,000. C. H. Caldwell, Spencer, S. D.; W. A. Barnhart, Salem, S. D.; G. W. Blackwood, Spencer, S. D. Object to quarry and crush rock.

American Coal Products Co., Portland, Me., acquire, develop mines and mineral lands, general mining, milling, quarrying, etc. \$100,000; par \$100. President, Clarence G. Trott; treasurer, P. B. Drew; clerk, T. L. Croteau.

Kingwood Stone Co., of Kingwood, W. Va., to operate quarries in Preston County; capital stock, \$100,000; incorporators, Joseph L. Keener, Morris L. Clovis, Harold G. Hodges, Cassius C. Brown and George C. Stelle, all of Morgantown, W. Va.

Millville Stone and Lime Co., of Millville, Pa.; to operate in Pennsylvania and West Virginia; capital stock, \$535,000; incorporators, E. J. McKenna, W. H. Lemon, E. B. Strassburger, K. R. Connolly, of Pittsburgh, and E. R. Sullivan, of Crafton, Pa.

The Cowtown Crushed Stone & Mfg. Co., Baltimore, Md., has perfected its organization and is planning for the immediate development of about 45 acres of property near Fullerton, Md.; the daily output of the quarry to be about 400 tons. George J. Thaler is president.

Application for a charter has been made in Pennsylvania by W. U. Jury, Fred Kumer and Charles C. Lark, solicitor, of Shamokin, Pa., for the Carbon Sand and Construction Co., to produce sand from boiler cinders and stone, and to manufacture concrete building material.

Amalgamated Bituminous Corporation, Manhattan; to manufacture bituminous paints and cements; capital, \$125,000. Directors: L. A. Dalrymple Percival, Sands Point, Long Island; John A. Percival, 396 Decatur street, Brooklyn, N. Y.; Fred A. Percival, Jersey City, N. J.

The Hoosier Lime Co., Salem, Ind., to produce stone for road and street improvement. Capital, \$30,000. The company has acquired a quarry on the Monon, near Salem, Ind., formerly owned by the Utica Lime & Cement Co., of Louisville. The purchase includes fifty acres of limestone land with the equipment for operation. Incorporators are Herman Vernia, Henry Hogan and Wesley Hedrick, of Chicago.

Barnard & Billing Mfg. Co., Inc., Kings, N. Y.; to manufacture waterproof and other cements; capital, \$25,000. Directors: Bleecker S. Barnard, 50 Church street, New York; Joseph Billing, 78 St. Marks avenue, Brooklyn,

N. Y.; Henry P. McElearney, 231 N. Henry street, Brooklyn, N. Y.

The Fetterman Cement and Brick Co., Fetterman, Wyoming; the manufacture and sale of cement, brick and clay products; capital, \$250,000. Directors: L. J. Lohlein, Gunther Carlberg, John F. Harkin, of Lusk, Wyo.; Henry Metz, of Fetterman, Wyo.; R. D. Hawley, of Douglas, Wyo.

Harry F. Curtis, Francis J. Hill and John Thiel have applied for a charter in Pennsylvania for the Curtis & Hill Gravel and Sand Co., to mine, dig and quarry for sand, clay, stone, gravel and to manufacture articles from these products. Bell, Trinkle & Deeter, 1330 Land Title Bldg., Philadelphia, are the solicitors.

Milliken Bros. Manufacturing Co., Inc., Manhattan, N. Y.; to produce, buy or in any manner acquire and generally deal in and with every kind of brick, stone and building materials; capital, \$1,000. Directors: Christopher C. Clack, 54 Wall street, St. George, Staten Island, N. Y.; John E. Jennings, 95 Nassau street, New York; Herbert Cohen, 1001 Home street, Bronx, N. Y.

## Manufacturers

Fuller-Lehigh Company is the new name of the Lehigh Car, Wheel and Axle Works, of Fullerton, Pa. The change in name does not affect the executive personnel of the organization or its business.

C. K. Williams & Co., Easton, Pa., manufacturers of the Anchor Brand Colors for Mortar, Cement and Brick, are putting forth some very commendable advertising matter calling attention to the needs and requirements of this line of product.

The United States Gypsum Co.'s annual report shows a balance of \$360,792 earned after payment of all charges, including taxes and preferred dividends, as compared with \$306,469 in 1916. This is equal to 9.23 per cent on each share of common stock outstanding against 7.85 per cent a share the preceding year. Net earnings were \$1,288,637, while in the year previous they were \$1,092,178. There was a greater allowance for repairs and depreciation, but this was partly offset by lessened interest charges. There was paid out \$372,844 in dividends during the year compared with \$383,966 in 1916. The allowance for federal taxes amounts to \$78,726. Total surplus now stands at \$900,091 compared with \$539,699 a year ago.

## Retail Dealers

W. M. Rynerson, 501 Fifth Ave., New York, has been appointed local representative for the Builders' Material Supply Co., Baltimore, Md.

Incorporated, Luck Block & Tile Co., Luck, Wis., dealers in lime, cement, cement products and building materials. Incorporators, P. M. C. Pedersen, Jens S. Pedersen and Karl Schroder. Capital, \$12,000.

Export Trade Association, Inc., Manhattan; to engage in export trade and to deal chiefly in pebble, phosphate or hard rock phosphate; capital, \$500. Directors: Andrew B. Graffius, Bronxville, N. Y.; Alfred A. Dean, 68 E. 235th street, New York; Geo. H. Burt, Roselle, N. J.

## Lime

County Agent W. B. Wolf of Mountain Home, Ark., has installed and is operating a rock crusher for Baxter County farmers.

The Marblehead Lime Co. at Hannibal, Mo., reports that every employee of the company has bought at least one Third Liberty Loan bond.

County Agent L. A. Markham, of Janesville, Wis., has been considering the purchase of a limestone crusher at the suggestion of local farmers.

The Knickerbocker Lime Co., Philadelphia, Pa., is building a new one-story structure, 30x150 ft., at its works at Malvern, Pa., to be equipped as a loading plant and will cost \$15,000.

Valley Springs Lime Co., of Stockton, Cal., has announced its intention to allow its franchise to lapse, according to a San Francisco paper. No stock was sold by the company.

Florida laws do not classify lime as fertilizer and it is not required to be sold under guarantee. There is no inspection fee and it is not subject to free analysis by the Secretary of State.

The steamer W. F. White of the Michigan Limestone & Chemical Co. was the first boat to leave Buffalo this year. It left for Calcite, where the big plant is located, defying the ice with which Lake Erie was encumbered.

A newspaper report states that the Kelley Island Lime and Transport Co. has announced at Port Clinton that there will be an increase in wages equaling four cents an hour for common laborers; others will be increased in proportion.

J. G. Davies of Sacramento, Calif., is assembling machinery for the purpose of operating on a lime deposit at Sloat, Calif. The red lands of this district require lime, according to the county horticultural commissioner, Earle Mills.

The Kaweah Lime Products Co., of Fresno, Cal., have erected an immense three mill crusher at the old lime kiln at Lemon Cove. This plant cost \$40,000 to erect. They are now turning out 200 tons of the finished product a day. This lime is extra fine for fertilizer in orange orchards and on other soil.


Reports that the government plans to spend \$500,000,000 in establishment of nitrate plants indicates that ultimately lime will be produced in large quantities. Besides the \$30,000,000 and \$5,000,000 plants at Muscle Shoals, Ala., the war department has planned a \$10,000,000 plant on a 2,000-acre site at Kingsport, Tenn. The cyanamid process will be installed and when the plant is completed 20,000 men will be employed.

The Chamber of Commerce, Oroville, Cal., is aggressively considering the matter of agricultural lime, for which the farmers and orchardists of that vicinity appear to be in need. A newspaper report states that through the activity of Sec. E. B. Ward of the chamber of commerce, the Natomas Consolidated may add the machinery necessary to produce lime. The lime is found at Bloomer, Virgilia and Twain. L. R. Stokes of the latter place is considering the establishment of a plant as he owns two deposits, one at Twain and another at Virgilia.


## The Hour for Giving is Here and Now

**A**LTOGETHER this war for Civilization, for Humanity and for the preservation of our Ideals and Rights calls from each one of us the exercise of every moral virtue and natural excellence, and one of the greatest of these is—GIVING. To Give is God-like and is best expressed in this dreadful hour by a contribution to the Red Cross.





# USED EQUIPMENT



ADVERTISEMENTS in this department are for the Sale and Want of Second-Hand Machinery and Equipment.

RATES: \$2.50 per column inch per insertion.

## IMMEDIATE DELIVERY

2—No. 6 McCully Gyratory Crushers equipped with manganese steel head and concaves and heavy duty shaft, standard discharge, 12 x 44 in. feed openings, 34 x 16 driving pulley, weight 48,000 lb. each, complete. Capacity 50 tons, 2-in. stone an hour; 120 tons 4½-in. stone an hour. Bought in 1916; used only one month; excellent condition.

1—Patnoe Steel Chain Elevator complete on wood frame with geared head and driving pulley, 35-ft. centers, 53 elevator buckets, 42-in. x 19. Bought in 1916.

1—No. 8 Geared Head Elevator complete on wood frame with 32-in. 8-ply belt, 69-ft. centers, 105 elevator buckets, 30 in. x 17. Bought in 1916.

1—Thomas 3-Drum Electric Hoist equipped with latest improved boom swinging attachment with 150-hp. AC Wagner motor, 514 rpm.

1—10 x 12 Chicago Pneumatic Tool Co. Air Compressor, Style GC-SC, 11 x 18 x 16½, Belt Drive, with horizontal Air Receiver 4½ x 11½. 500 cu. ft. per min.

OSCAR DANIELS CO., First National Bank Bldg., Chicago

## IMMEDIATE SHIPMENT

- 1—Motor-driven Rock Crushing plant (complete).
- 2—1500 cu. ft. steam driven air compressors.
- 20—Crushers, sizes No. 2 to No. 12.
- 1—Piece ½" Roebling steel cable, 580'. Traction Brand, 10c foot.
- 4—Pieces ¾" Roebling steel cable, 285' each. Traction Brand, 11c foot.

POWER PLANT EQUIPMENT.  
SEND US YOUR INQUIRIES.

**Ross Power Equipment Co.**  
INDIANAPOLIS, INDIANA

## FOR SALE One No. 2 Clipper

machine, gasoline, non-tractor outfit for blast hole drilling 5-inch tools and belt-driven Ford blower.

**The Rocky Ridge Lime and Stone Co.**  
252 Ohio Building TOLEDO, OHIO

## ROCK PRODUCTS

Fills the Bill.

Read It!

Advertise in It!

It Pays!

## For Immediate Delivery

- 1—3-ton Plymouth Gasoline Locomotive, 24" Gauge;
- 1—No. 16 New Holland Jaw Crusher, extra Rolls for Pulverizing, 18" Elevator, 15-ton Bin and Screen, all on Trucks;
- 1—50 H. P. Foos Gas Engine;
- 1—100-H. P. Thomas Electric D. C. Hoist;
- 1—3½" Woods Rock Drill;
- 1—80 and 1—100 H. P. Locomotive Type Boiler;
- 24"-36" Gauge Sectional Track;
- 20 Lbs. Rail Frogs and Switches.

Hoisting Engines, Concrete Mixers, Boilers, Derricks, Sectional Track, Rail, Pipe and Cable

**T. J. Lane Equipment Company**  
Bushwall Building SPRINGFIELD, OHIO

## RAILS

All sections of new and second-hand, on hand for quick shipment. Also purchase old and abandoned plants for dismantling purposes.

**M. K. FRANK, Pittsburgh, Pa.**

## FOR SALE

Traveling derrick, 14' gauge, 8 wheels, 40' mast, 80' boom, 3 drums. Engines 10"x14". Rotary swinging engine. Boiler 60"x10". Locomotive type 3-yd. Williams clamshell bucket. Also electric hoist, 2 drum, with 100 H. P. Motor, 720 R. P. M., 440 volts, 122 amp. 60 cycle, 3 phase all-steel machine and almost new. Can be inspected at Erie.

**J. W. OWENS**  
1908 French Street Erie, Pennsylvania

## Idle Machinery Absorbs Profits

*This department is the medium for the men who keep the wheels going. Sell your idle machinery to the man who'll keep it going.*

## CRUSHER EQUIPMENT

Prices Cut to Close Out Quickly

No. 8K Allis-Chalmers Crusher, Shop No. 6760. Tip-top condition. Left hand angle drive. Extra Eccentric and Concaves.

15 Quarry Cars, 2 yard, All Steel, End Dump, 36" Gauge. Built for hard work. You can't wreck them.

48"x20' Allis-Chalmers ALL METAL Revolving Screen with 6' Dust Jacket. Screen Sections to suit purchaser.

Two Belt Driven Friction Hoists, nearly new; fine condition. Will handle 4 yard cars on 30 per cent incline.

20"x30" Buckeye, Double Valve Automatic Steam Engine. Runs like a watch. Make your own price.

Send for complete list.

**LEHIGH STONE CO. KANKAKEE, ILL.**

## FOR SALE

Thew

## Steam Shovel

No. 0—⅝-yd. bucket, traction wheels. In absolutely first-class condition. Address

**R. J. NOONEY**  
P. O. Box 210, E. Akron, Ohio

## Second Hand Grinding Machinery For Sale

On account of changes, several 42-in. Fuller Mills all in good condition are for sale.

WRITE

**A-30-18, Care This Paper**

## FOR SALE—BARGAIN

Complete outfit for making concrete farm drain tile, Dunn power-press, engine, concrete mixer, forms, etc.

Also set of concrete sewer pipe forms.

Call on or address

**MOBILE COAL COMPANY**  
MOBILE, ALABAMA

*It gets immediate attention if you mention ROCK PRODUCTS.*

# CLASSIFIED ADVERTISING

ADVERTISEMENTS in this department are for Positions Wanted, Positions Vacant, Business Opportunities, Plants for Sale, etc.

RATES: 25c per line, per insertion; minimum charge, 50c. With display of any sort, \$2.50 per column inch, per insertion.

## Help Wanted

### Master Mechanic Wanted

An up-to-date, ambitious and energetic man for a permanent position in an organization where merit is rewarded, to take entire charge of maintenance and repairs of cement mill equipment. Give detailed experience, age and salary you are willing to start for. Address

**Box 1256, care Rock Products**

WANTED: Competent man to take charge of stone quarry producing crushed stone for railroad ballast, highway purposes and concrete work. State age and experience, also salary required, as well as where last employed. Address Box 1254, care Rock PRODUCTS.

WANTED: Competent man to take charge of Limestone Quarry in La., producing crushed rock and ground limestone. Must have thorough knowledge of machinery and quarry operations. New equipment and improvements to increase capacity of plant under consideration. Splendid opening for a capable, energetic man. State age, experience and references. Address I. L. Lyons, Jr., P. O. Box 1680, New Orleans, La.

## Positions Wanted

POSITION WANTED as manager or Supt. by man of long experience in heavy steam shovel quarrying, where mine or well drill blasting is essential to large output and efficient operation, thorough knowledge of all details in successful operation and management, excellent references. Address Box 1241, care Rock PRODUCTS.

POSITION WANTED: As manager or superintendent by practical man with life experience in large Quarries, in Sandstone, Limestone and Granite. Understands thoroughly all Quarry and Crushing Equipment and their application to economical production, and is capable of managing all or any part of the business. Results guaranteed. Box 1257, care Rock PRODUCTS.

POSITION WANTED: As quarry Superintendent by man with mechanical and construction ability. Have had 20 years' experience developing and operating quarries for some of the greatest stone producers in the country. Would take entire charge of operation of the largest of quarries. Address Box 1258, care Rock PRODUCTS.

## Plants for Sale

FOR SALE OR LEASE: Crushed stone quarry situated near Wilkes-Barre, Pa. Very hard green sandstone, practically

equal to trap rock for road material. Quarry equipped to produce five to six hundred tons per day—has frequently run eight hundred. Ample rail facilities and an extensive market. For detailed information communicate with Arthur L. Stull, 182 S. Franklin St., Wilkes-Barre, Pa.

FOR SALE: Limestone Crushing and Pulverizing plant, on Southern Railway, North Alabama. First class, very cheap, stone inexhaustible, best quality. Gone to Army—must sell. For full details address 2237 Doswell Avenue, St. Paul, Minnesota.

FOR SALE: Sand and stone quarry, fully equipped. Proposition includes about 400 acres of land, 15 miles from Pottsville. Includes large engine, 2 boilers, small and large stone crushers and about 2000 ft. of railroad siding to the sand hills, connected with the P. & R. Ry. ready to start work inside of 24 hrs. Low rates can be obtained from the carriers. If not sold by May 15th, plant will be dismantled to highest bidder, including all machinery such as 125 H.P. Allison engine, 2 boilers with equal capacity, recently replenished with new tubes, large and small stone crusher, blacksmith and repair house, sand and stone screens, all kinds of tools. Excellent market in Schuylkill Co. For further information address Joseph H. Garside, 100 S. Center St., Pottsville, Pa. Advanced age of owner reason for selling. Address P. O. Box No. 265, Pottsville, Pa.

## "The Latest News First"

ROCK PRODUCTS gives you the latest news and the most instructive semi-technical discussions in interesting, concise form. The busy man reads ROCK PRODUCTS.

Subscribe now for next year, for yourself and your employes. Mail the coupon.

ROCK PRODUCTS, 538 So. Clark St., Chicago.

Enclosed is \$2 for 26 issues (1 year) of ROCK PRODUCTS.

Name .....

Address .....

I am engaged in.....

(State nature of work: Quarry, Pit, Mill, etc.)

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## CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributors of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere.

Also Southern agents for the "Dehydratino" waterproofing material. "Universal," "Acme" and "Electrold" Brands Ready Roofing.

GET OUR PRICES

CHARLESTON, S. C. BIRMINGHAM, ALA.  
ATLANTA, GA. NEW ORLEANS, LA.

## CONCRETE FOR PERMANENCE

### "Wolverine" FOR CONCRETE

*Wherever used "Wolverine" has always given the highest satisfaction*

Wolverine Portland Cement Co.  
COLDWATER, MICH.

Write for prices and information. W. E. COBEAN, Gen. Sales. Agt.



## THE BACKBONE OF

Civic beautification has a dollars and cents value—if permanent. Appearance, economy and service are insured by concrete.

Samuel H. French & Co.  
Est. 1844 PHILADELPHIA

## PERMANENT CONSTRUCTION

## Keep in Touch

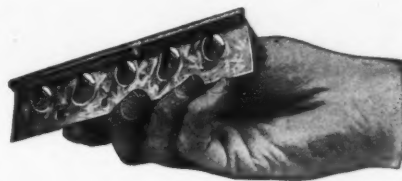
With the big men and big ideas in the building material field by reading both the

Editorial and Advertising Columns  
of

## ROCK PRODUCTS

*It Pays*

*The advertiser wants to know that you saw his ad in ROCK PRODUCTS.*



Use

**Penco**  
TRADE MARK  
1869



"Penco" on corner beads, metal lath, metal stud, and all forms of sheet iron and steel building material is "The Metal Mark of Quality."

Our literature explains in detail the exclusive features of Penco goods. Write—Now!

### DEALERS

We can make immediate deliveries to you—no matter in what part of the country you are located.

**PENN METAL COMPANY**  
559 West 36th Street New York

## Red, Brown, Buff and Black



**MORTAR  
COLORS**



### The Strongest and Most Economical on the Market

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color.

Write for samples and quotations

**CHATTANOOGA PAINT CO.**  
CHATTANOOGA, TENNESSEE

## ANCHOR BRAND COLORS

*For Mortar, Cement and Brick—  
Brown, Black, Red and Buff  
—Strongest and Most Durable*

Manufactured by

**C. K. WILLIAMS & CO.**

Correspondence Solicited

EASTON, PA., U. S. A.

## The Fuller Engineering Co.

Designing, Constructing and Operating Engineers

### Analytical Chemists

Cement and Hydrated Lime Plants a Specialty

Offices: Allentown National Bank Building  
ALLENTOWN, PENNSYLVANIA

## F. L. SMIDTH & CO.

50 CHURCH STREET

NEW YORK

### Engineers

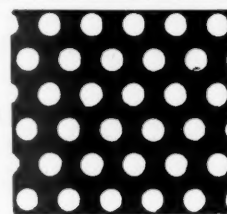
CEMENT MANUFACTURING PLANTS  
CEMENT MAKING MACHINERY  
PULVERIZED COAL INSTALLATIONS  
GRANULATING AND PULVERIZING  
MACHINES FOR ALL MATERIALS  
FLINT PEBBLES—SILEX LINING  
THE LENIX BELT DRIVE

## SCREENS of All Kinds



### Chicago Perforating Co.

2445 West 24th Place  
Tel. Canal 1459 CHICAGO, ILL.

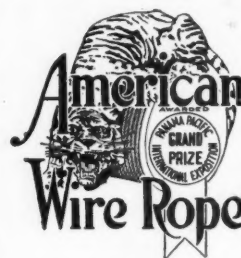


"Hendrick" Perforated Steel Screens and  
Elevator Buckets stand the test

Let us figure on your requirements

### HENDRICK MFG. COMPANY

New York Office, 30 Church Street, CARBONDALE, PA.



FOR elevators, dredges,  
lumbering, mining, oil-  
well drilling, suspension  
bridges, stump-pulling,  
cranes, derricks, ships' rig-  
ging and every other form of  
wire rope use.

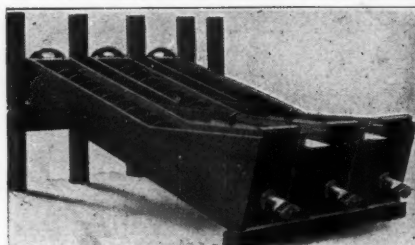
Ask for illustrated  
catalogue

### American Steel & Wire Company

Chicago, New York, Cleveland, Pittsburgh, Worcester, Denver

Export Representative: U. S. Steel Products Co., New York

Pacific Coast Representative: U. S. Steel Products Co.  
San Francisco Los Angeles Portland Seattle



Sand Washers



9-Foot Dry Pan

### LEWISTOWN FOUNDRY & MACHINE CO.

LEWISTOWN, PA.

Builders of heavy duty crushers and glass sand machinery. Glass  
sand plants equipped complete. Write for prices and catalog

## BACON-FARREL ORE & ROCK CRUSHING-WORLD KNOWN ROLLS-CRUSHERS

EARLE C. BACON, INC. ENGINEERS  
26 CORTLANDT ST., NEW YORK

Saying "I saw it in ROCK PRODUCTS" will bring quick action.



## DON'T THINK FOR A MOMENT

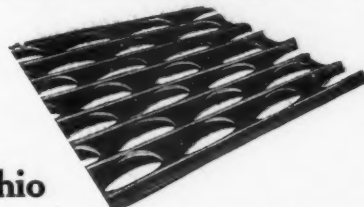
*That the saving by the use of "Truss- **LOOP** " Lath is hot air or sales talk*

It is an acknowledged proven fact. If you want to know what the fellow that has used it says, just drop us a line and we will send you a few statements of practical men that will give you first hand sales arguments, which will save many a job for Metal Lath which would otherwise go to less fire-resistive construction on account of 1918 costs.

You want this information—we want to give it to you

*Let us hear from you at once*

**THE BOSTWICK STEEL LATH COMPANY, Niles, Ohio**



*Daily Capacity 9,000 Barrels*

**MORE THAN FIFTEEN YEARS OF SATISFACTION**

GREAT WATER AND RAIL FACILITIES BEST SERVE THE ENTIRE MIDDLE WEST  
FIVE PLANTS: ALPENA, DETROIT, WYANDOTTE, CLEVELAND AND DULUTH

# HURON and WYANDOTTE

EVERY BARREL TESTED AND GUARANTEED

SOLD BY THE BEST DEALERS

USED BY THE BEST BUILDERS

Main Offices: 1525 Ford Building, Detroit, Michigan

*Quality, Quantity, Service*



# If It Is LIME We Make It

(STRONGEST IN OHIO)

Bulk and Barreled : "MASON'S HYDRATE," for Brick-work, plastering and masonry : "LIME FLOUR," Hydrated Finishing Lime, Best on the Market : "CLOVER GROWER," Land restorer, for the farmer : "CARBO HYDRATE," Soil sweetener, crop producer.

PROMPT SHIPMENTS

A DEALER WANTED IN EVERY TOWN

*Write or Phone for Prices*

**The Scioto Lime and Stone Company, Delaware, Ohio**



*You will get entire satisfaction if you mention ROCK PRODUCTS.*



Service  
and  
Satisfaction

## Wire Cloth

all sizes and meshes made in iron, steel, brass, copper, galvanized and special metals. Rock, crushed stone, sand and ore screens. All grades of sieves and riddles—

That's what we manufacture and sell. But we do not consider our business a mere matter of production and transfer. With each order is an intermingling of service and courtesy.

*Big Booklet Free!*

**Audubon Wire Cloth Co.**  
INC.

Factory & Office:  
AUDUBON NEW JERSEY

## Lopulco Equipment Successfully Burns Anthracite Slush

Next winter you may be short of fuel—"Lopulco" Pulverized Fuel Equipment makes you independent of the commercial coal sizes.

It gives excellent results with anthracite slush and other low grade fuels.

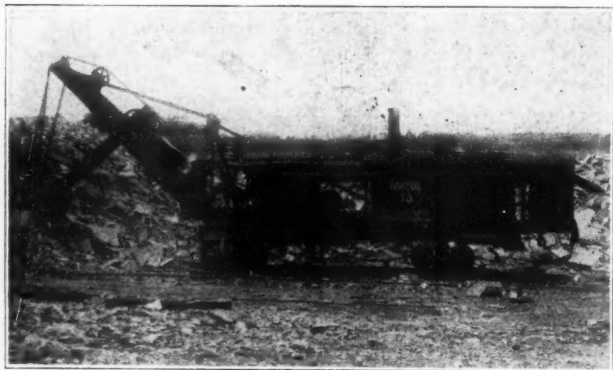


**Lopulco**  
TRADE MARK

Industrial Department  
**Locomotive Pulverized Fuel Co.**

*Designers and Builders of Complete Installations*

30 Church Street New York  
Transportation Building, Montreal



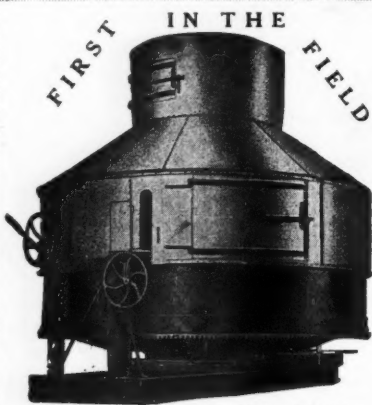
Osgood-73, in Heavy Quarry Work

**THE OSGOOD 73—3½ yard steam shovel** is designed throughout for the heaviest kind of service. It meets demands where maximum strength is required and severe work to be done, such as found in iron mines, rock works, etc.

It has all the features in good steam shovel construction which embody steel gears with machine cut teeth; manganese racks and pinions for dipper handle; cast steel swinging circle; heavy front end construction; especially strong boom; large boiler and water tanks; long car frame; enclosed firing platform; steam hoisting friction; by-pass throttle, etc.

We will take pleasure in furnishing you on request complete information on any of the different size shovels we build which range from ¼ to 6 cubic yard capacity.

**THE OSGOOD COMPANY, Marion, O.**



CLYDE HYDRATOR WITH HOOD  
"The common sense way"

## The CLYDE LIME HYDRATOR

The simplest and easiest to operate. The most economical in Installation, Maintenance and Operation. Makes a perfect hydrate of either High Calcium or Dolomite Lime.

Price, per ton capacity, only three-fifths of any other Hydrator on the market.

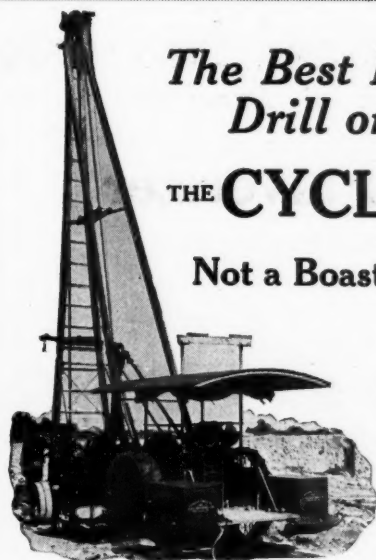
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*Patentee and Sole Manufacturer.*

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## The Best Blast-Hole Drill on Earth

THE **CYCLONE** No. 14

**Not a Boast—A FACT**

We will prove the superiority of the No. 14 Drill by placing one of the outfits in your quarry against any or all other makes.

If the Cyclone doesn't out-drill and out-wear all other drills, we will remove it from the work without cost to you.

Our proposition gets below the paint—it eliminates talking points and evaporates hot air. It puts buying on a strictly engineering basis where it belongs.

Furnished in Steam, Gasoline, Compressed Air or Electric Power Traction or Non-Traction

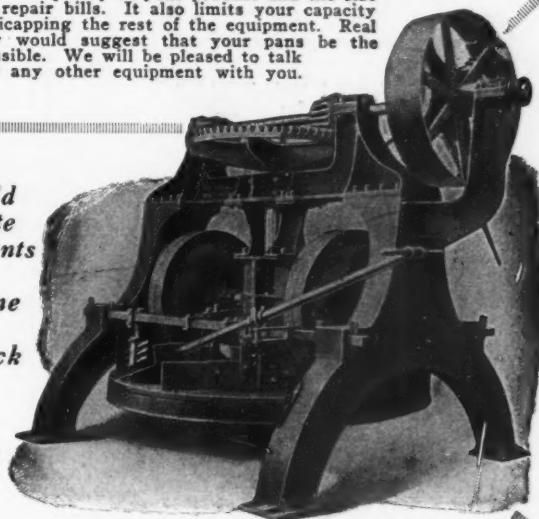
Let us send you full particulars

**THE SANDERSON-CYCLONE DRILL CO.**  
ORRVILLE, OHIO

Eastern and Export Office, 50 Church Street, New York

## Your Pan Needs

THIS pan is the identical pan required for your plant and it should speak to you convincingly of our pan quality. It has put many Sand-Lime Brick Plants on a paying basis and will make money for you. There is no line of pans made which will compare with the "Built Right, Run Right" line and your needs can be fully taken care of from our peerless line. We build pans with a range in size and capacity to meet any need. These pans are adapted for all the work that any pan will do. We have them in both belt and motor drive and will be pleased to give you any points on our pans that you may inquire about. A poor pan is an expensive proposition. Its inefficiency shows in the quality of your product and the size of your repair bills. It also limits your capacity by handicapping the rest of the equipment. Real economy would suggest that your pans be the best possible. We will be pleased to talk pans or any other equipment with you.



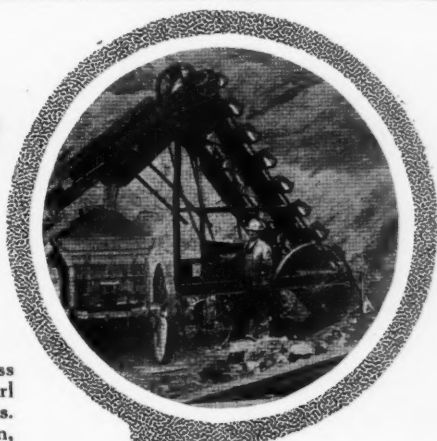
We Build  
Complete  
Equipments  
for  
Sand-Lime  
and  
Clay Brick  
Plants

**THE AMERICAN CLAY MACHINERY CO.**  
WILLOUGHBY, OHIO, U. S. A.

## Saves Money, Time, Labor

Whrrrr! The endless chain of buckets whirl for a few minutes. Then the wagon, freight car or truck is full. A wonderful solver of the labor problem as well as the means of getting full service out of trucks.

Why the Haiss Patented Digging Wagon Loader is the premier of them all is explained in our illustrated catalog.



Get Catalog from

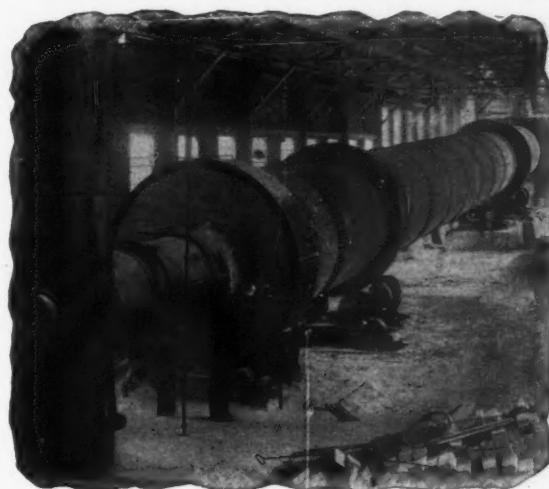
**Geo. Haiss Mfg. Co.**  
146th St. and Rider Ave.  
NEW YORK CITY

# HAISS

PATENTED

## Digging Wagon Loader

It gets immediate attention if you mention **ROCK PRODUCTS**.



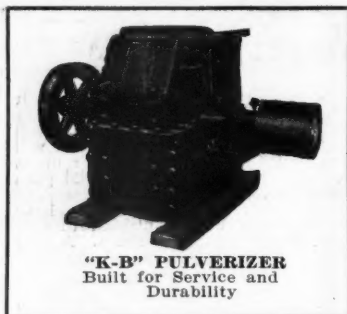
## Kilns Vulcan Iron Works

WILKES-BARRE, PA.

Experienced in designing and manufacturing Rotary Kilns for calcining of Lime, Cement, Dolomite, Magnesite, etc., together with their auxiliary equipment of Dryers and Coolers.

Drying installations for sand, all grades of rock, silica, and other materials requiring special treatment.

Quarry, Industrial and Long Haul Locomotives of all descriptions



"K-B" PULVERIZER  
Built for Service and  
Durability

## Make Agricultural Lime and Limestone

The Government is urging the use of Agricultural Lime by Farmers and such shipments are exempt from embargoes.

### You want the K-B Pulverizer

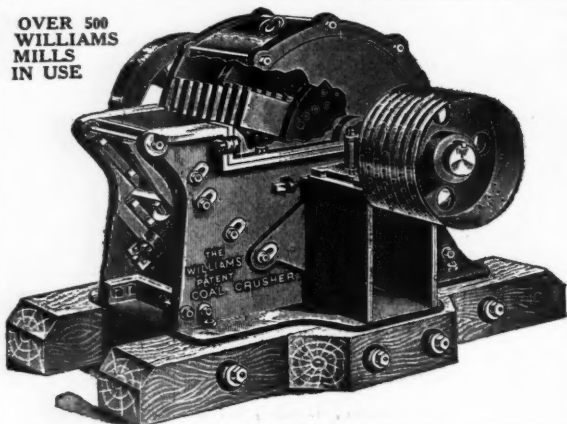
Because its rugged all-steel construction withstands the most severe service. Its manganese steel linings protect all parts from wear. Its adjustable U-Type manganese steel hammers insure a uniform product, with high capacity—and low power consumption.

Send for Catalog with full particulars

**K-B PULVERIZER COMPANY, Inc.** 86 Worth St. NEW YORK



OVER 500  
WILLIAMS  
MILLS  
IN USE

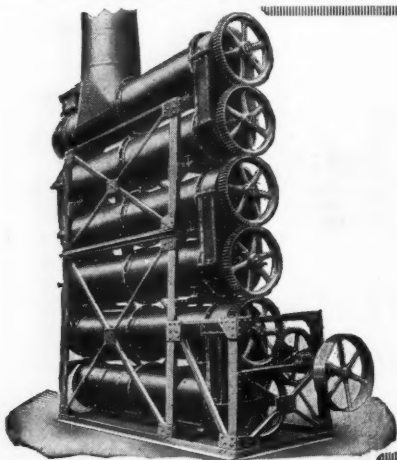


## WILLIAMS LUMP LIME CRUSHERS

Williams Lump Lime Crushers will take in lime in cubes 10", 12", 14", etc., and in one operation reduce same to 1/4", 1/8" or finer, as the case may be. Williams Lime Crushers are made in sizes ranging from a few hundred pounds up to 20 to 30 tons per hour, are therefore adapted to most any size plant. Parties considering installing Lime crushers to make either agricultural or hydrated lime, should investigate Williams Crushers, and secure Bulletin No. 4.

### THE WILLIAMS PAT. CRUSHER & PULVERIZER CO.

General Sales Dept., 37 West Van Buren Street  
Plant: ST. LOUIS CHICAGO 67 Second St. SAN FRANCISCO



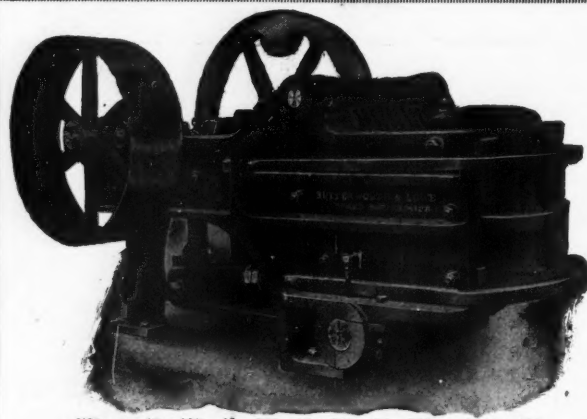
## Hydrated Lime

### THE KRITZER WAY

Insures a product which has a standard market value. We install plants complete, designed by our own expert engineers to meet local conditions and turn out a uniform grade of Hydrated Lime of the highest standard, and with the greatest economy in cost of production.

THE KRITZER CONTINUOUS HYDRATOR, AND THE ACCESSORIES INSTALLED WITH IT, ARE THE RECOGNIZED STANDARDS IN THIS LINE.

**THE KRITZER COMPANY,** 72 W. ADAMS ST., Chicago, Ill.



Nippers—17 x 19", 18 x 26", 20 x 30", 24 x 36" and 28 x 42"

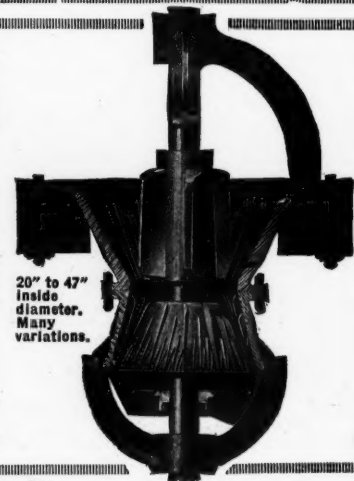
## JAW & ROTARY CRUSHERS

FOR ALL ROCKS AND ORES  
SOFTER THAN GRANITE

GYPSUM MACHINERY—We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

Special Crusher-Grinders for Lime

**Butterworth & Lowe**  
17 Huron Street, Grand Rapids, Mich.



20" to 47"  
inside  
diameter.  
Many  
variations.

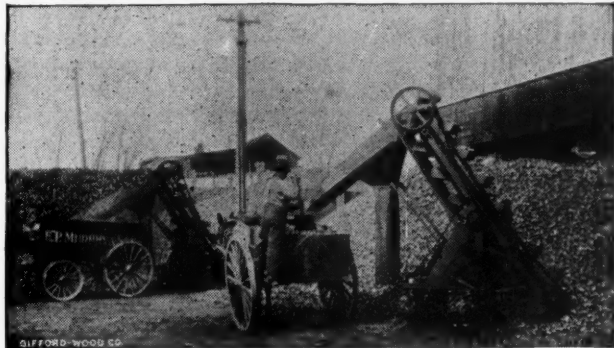
To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry.



## Stone Loading Problems Quickly Solved

Your troubles of loading and getting your teams or trucks started on their routes early are over as soon as you have installed Gifford-Wood Loaders in your yard.

The question of labor is forgotten—Number of Loads delivered per day greatly increased—Old customers better served—New customers quickly secured.



**ORDER YOUR LOADER TODAY**

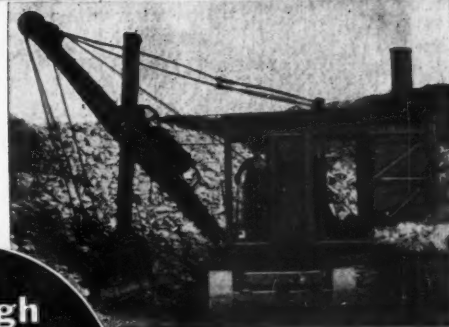
Bulletin No. 22 Tells the Story—Write for Copy  
Designers and Manufacturers of  
Elevators — Conveyors — Hoppers — Screens — Chutes —  
Buckets — Etc.

Write for Catalog No. 16-R

**GIFFORD-WOOD CO.**

Main Office and Works: HUDSON, N. Y.  
NEW YORK BUFFALO BOSTON CHICAGO PHILADELPHIA

## Erie Revolving Shovels



**"As high  
as 450 tons  
of trap rock  
per day"**

"Our rock is a hard trap, 2700 lbs. to the cubic yard. The Erie has done as high as 450 tons a day. It has given us very good service."

"Our shovel runner says there is no other shovel like the Erie—it is so easy to run, and to keep in good running order."

H. C. Lane, Pres., JOHN S. LANE & SON, Meriden, Conn.

Of course any kind of steam shovel will save you some money as compared with hand labor. But which shovel will save you the most? Find out which shovel is built strongest, for hard rock work. Find out which 3/4-yd. shovel gives the biggest output. We will be glad to send you a copy of our Bulletin "P." Write for it. Address:

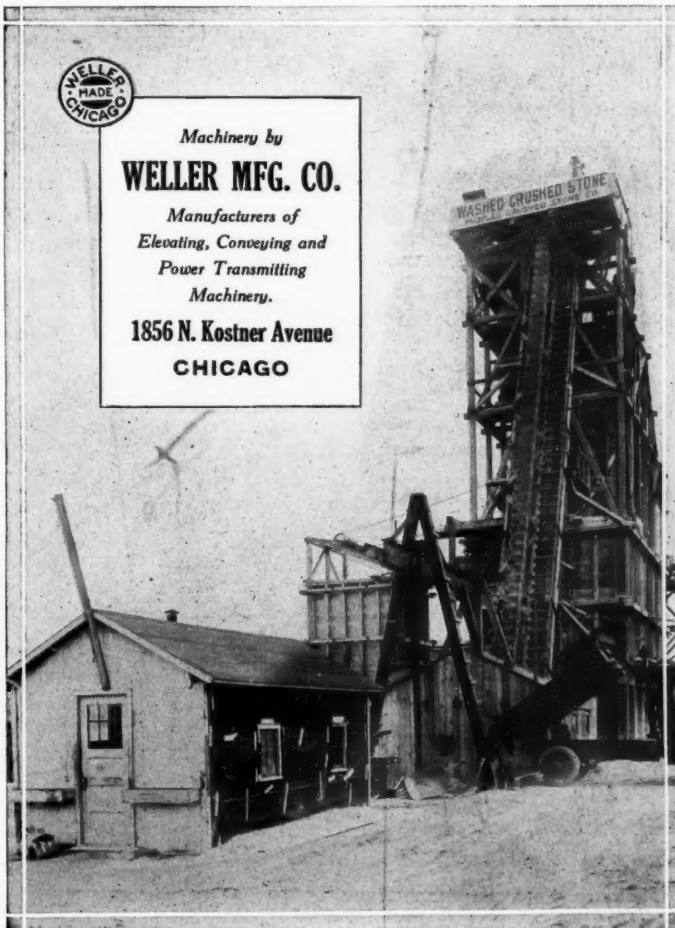
**Ball Engine Co., Erie, Pa.**



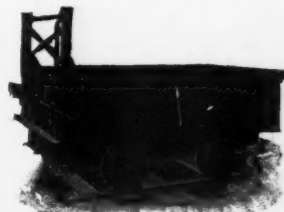
Machinery by  
**WELLER MFG. CO.**

Manufacturers of  
Elevating, Conveying and  
Power Transmitting  
Machinery.

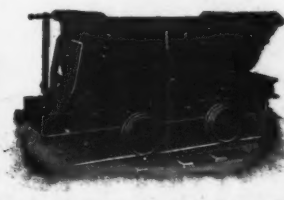
1856 N. Kostner Avenue  
CHICAGO



**Lime Hydrators, Kilns,  
Calcining and Quarry Cars**



No. 274  
End Dump Quarry Car.



No. 217-H Rocker Side Dump Car  
Also made in end dump. Above  
car made for loading with  
Steam Shovel.

**Reduce Your Handling Costs by Using  
Atlas Cars and Locomotives**

Where a trolley wire or third rail is undesirable investigate our storage battery locomotives. Made in several styles and sizes. Cars to suit every requirement.

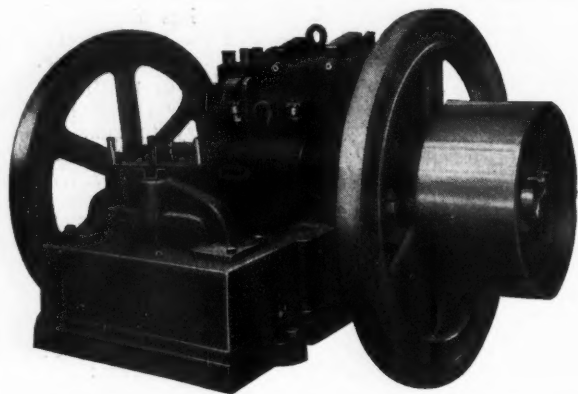
**THE ATLAS CAR & MFG. COMPANY**  
909 Marquette Road, Dept. 6, CLEVELAND, OHIO

THE man who has used  
all makes of crushers is  
the man who most appreci-  
ates

## WEBB CITY & CARTERVILLE CRUSHERS

If you are not a patron of  
ours, write for literature and  
find out why others are.

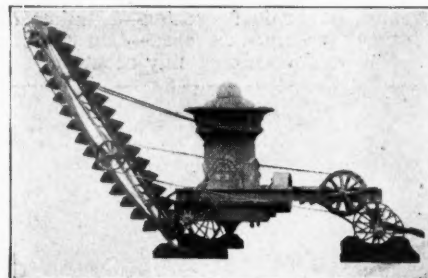
Webb City & Carterville  
Foundry & Machine Works  
WEBB CITY, MO.



## The Concrete Contractor

interested in the production of good  
stone at low cost is interested in the

## Austin Gyrotory Crusher



Made in portable and stationary plants—8 sizes  
—ranging from 50 to 5000 tons daily capacity—  
these machines are capable of crushing the

**hardest rocks**

There are six features of superiority in this  
crusher, which you positively cannot afford to  
overlook, and many others of great value.

WRITE FOR CATALOGUE

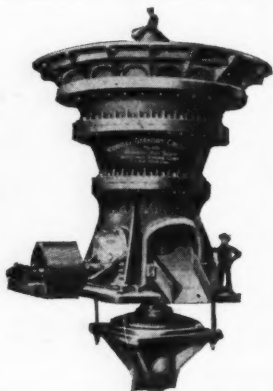
**Austin Manufacturing Company**  
CHICAGO

New York Office: 50 Church St.

We also manufacture a complete line of road-building and earth-  
handling machinery, including road rollers, road graders, scar-  
ifiers, pressure rollers, dump wagons, street cleaning equipment.

## Kennedy Crusher

*Admitted to Be  
the Best*



### OUR STOCK LIST

We have the following machines on hand;  
finished or semi-finished; for quick shipment.  
We also have manganese parts in stock.

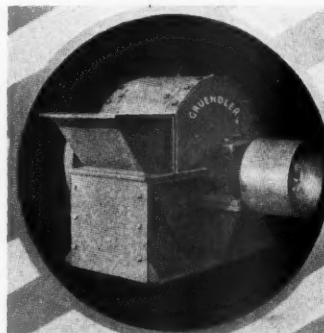
2 No. 3 Crushers	1 No. 10 Crusher
1 No. 4 Crusher	1 No. 27 Crusher
4 No. 5 Crushers	1 No. 30 Crusher
1 No. 6 Crusher	1 No. 37 Gearless Crusher
1 No. 7 Crusher	1 10x7 Roll Jaw Crusher
2 No. 8 Crushers	1 20x10 Roll Jaw Crusher

Manufactured by

**KENNEDY-VAN SAUN  
MFG. & ENG. CORP.**

120 Broadway

NEW YORK CITY

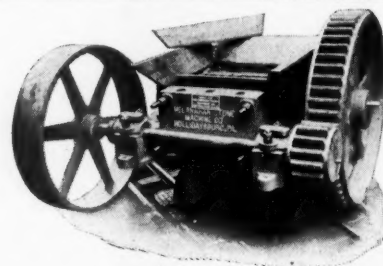


## GRUENDLER Crushers and Pulverizers

are especially adapted for pulveriz-  
ing limestone for fertilizing pur-  
poses; will increase your profits by  
increasing your production approx-  
imately 50%. The double-ended  
hammer arrangement is the reason.

*Let us explain*

**Gruendler Patent Crusher and Pulverizer Co.**  
ST. LOUIS, MISSOURI



## OUR SINGLE ROLL CRUSHER

**Is as Simple as Can Be** Is easily fed, makes less fines than either  
a Gyrotory or Jaw. Capacity 5 to 500  
tons per hour. For crushing Limestone, Dolomite, Hard Rock Phosphate, Cin-  
ders, etc. Screens of all descriptions. Washers for dirty stone.

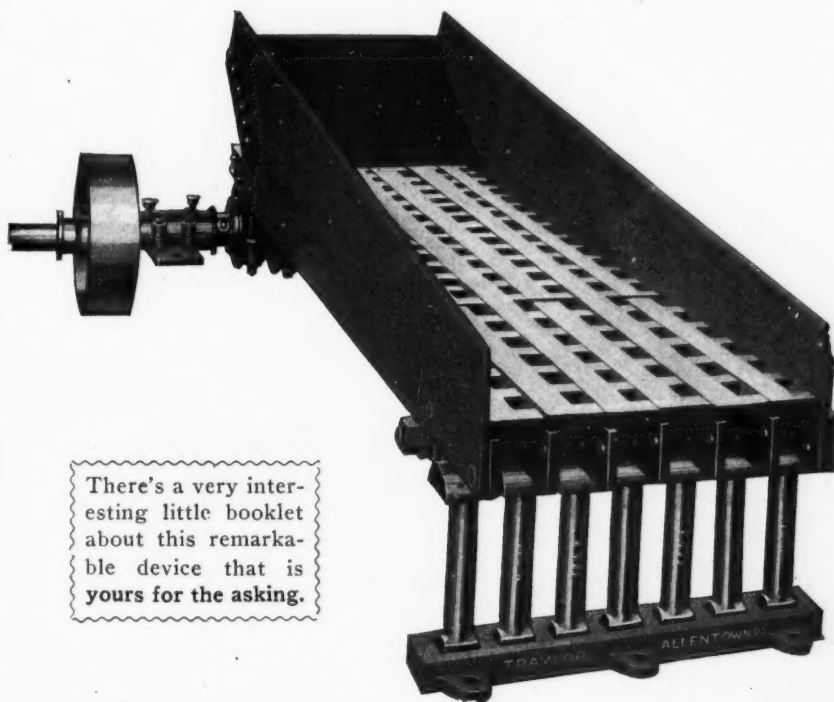
Ask for Information.

**McLANAHAN-STONE MACHINE CO., Hollidaysburg, Pa.**

To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry.



# The Sheridan Shaking Grizzly



There's a very interesting little booklet about this remarkable device that is yours for the asking.

This is the simplest, most efficient and strongest screening device on the market.

It will handle run of quarry stone and successfully remove the fines.

It will increase your plant capacity by providing your initial crusher with a clean, even and continuous feed.

It will reduce the amount of dust by removing the under size stone between crushing operations.

It will screen damp, clayey, earthy material in a highly satisfactory manner.

It will do all this and more at a very slight expense for power and head room.

**TRAYLOR ENGINEERING & MANUFACTURING COMPANY**  
ALLENTOWN, PA.

NEW YORK OFFICE.....30 Church Street  
CHICAGO OFFICE.....1414 Fisher Building

## UNIVERSAL CRUSHERS

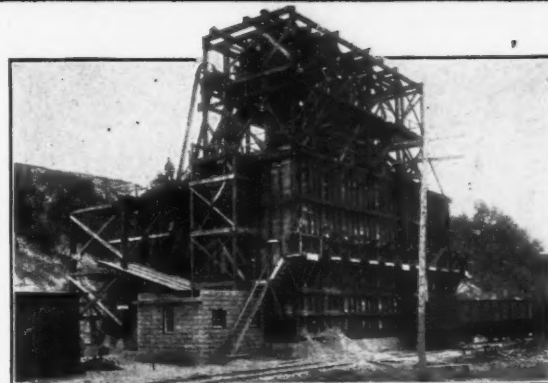
The biggest value for your money. Universal crushers and pulverizers reduce stone to desired size or fineness in a jiffy! Fifteen years of designing and building experience have made possible the exceptional ability of Universals.

**Universal Crusher Co.**  
225 Third Street  
Cedar Rapids, Iowa, U.S.A.



Ask  
for  
Folder  
1918

## Clean Sand



This plant produces CLEAN SAND. The dependable **G-R-M SAND SETTLING TANK** does the work. The sand is WASHED AND DRAINED

Fine sand may be rejected at will by the use of the adjustable overflow

No matter how dirty the sand, the G-R-M Sand Settling Tank will clean it. It churns up the sand, loosens the dirt, and floats the foreign matter off at one end, while the clean sand is taken out from the other end.

**SEND FOR INFORMATION—USE THE COUPON**

**GOOD ROADS MACHINERY CO.** 717 OSAGE ST., FORT WAYNE, IND.

Good Roads Machinery Co., 717 Osage St., Fort Wayne, Ind.

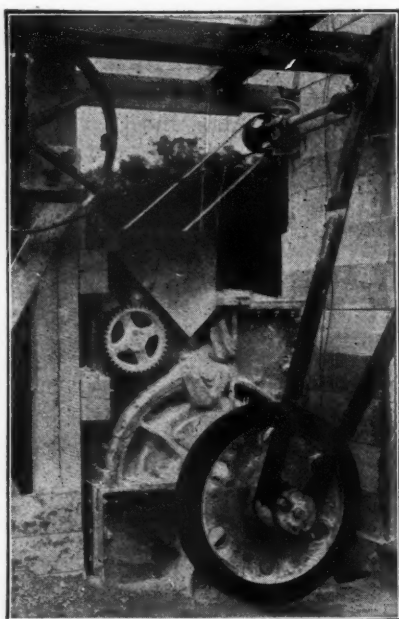
Gentlemen: You may send me additional information concerning the G-R-M Sand Settling Tank.

Name.....

Address.....

We are now washing..... tons of sand per day.

For better service say "I saw it in ROCK PRODUCTS."



This plant paid 5 times its cost  
in profits in 5 months running.

# LIME-STONE FOR THE FARMER

*Buy a Guaranteed Machine*  
Cost of production 15 to 30  
cents a ton produced by the  
**American Ring Pulverizer**

We guarantee exact power consumption, production, wear  
and tear, upkeep, etc., according to your proposition.

The Patented **American Ring Pulverizer** is Doing it

Write for Prices and Plans to the

**AMERICAN PULVERIZER CO.** CORNER 18th AND  
AUSTIN STREETS  
We Crush Everything

GEORGE C. VIDETTO MACHINERY COMPANY  
717 Bessemer Building, Pittsburgh, Pa.

**St. Louis, Missouri**  
Why can't you do it?

“ S-A ”

Screw Conveyors  
Flight Conveyors  
Crushers and Screens  
Bucket Elevators  
Gravity Discharge Conveyors  
Divided Bucket Carriers  
Complete Washing Plants

**ELEVATING and  
CONVEYING MACHINERY**

Everything, in short, to equip or improve quarries  
and pits. When in need of new machinery and  
parts, consult us.

S-A products will please you greatly. The S-A  
catalogue will acquaint you with our tremendous  
and widely diversified line.

**STEPHENS-ADAMSON MFG. COMPANY**  
AURORA, ILLINOIS





## "OK." Says the U.S.A.

Limestone in its various forms—for agricultural purposes—is being favored by the Government. Freight cars are at the service of the producers who make agricultural shipments.



## The Bradley <sup>THREE</sup> ROLL Mill

will put you into this profitable field with both feet. While others make claims, we can prove that the Bradley Mill will produce the finest product at the lowest cost. The Bradley takes  $\frac{3}{4}$  inch material and reduces it to a fine powder in one operation. Our catalogue gives details.

*So Ask For It--TODAY!*

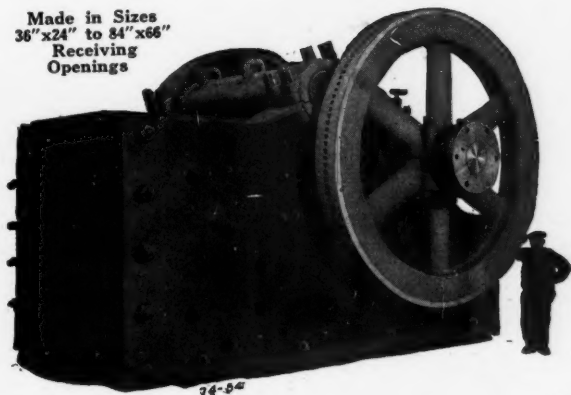
**BRADLEY PULVERIZER CO.**  
Boston, Mass. Works: Allentown, Pa.

Works: ALLENTOWN, PA.

## Takes BIG, HEAVY ROCKS Right from the Steam Shovel

# SUPERIOR Jaw Crusher

Made in Sizes  
36"x24" to 84"x66"  
Receiving  
Openings



Cut Powder Bills in half by using a large opening Superior Jaw Crusher as the initial breaker.

Jaw-plates of manganese or chilled iron renewable in SECTIONS which are easily handled and rapidly replaced instead of renewing the WHOLE jaw-plate. They can't jar loose.

Sides of crusher mouth protected by heavy steel plates. Special attention given to lubrication. Driving methods can be adapted to meet conditions on the job. Capacities from 70 to 450 tons of rock per hour.

Don't experiment with crushers—get details of the Superior.

*Let us send you Bulletin 44-58. To receive a copy just send your name and address*

**WORTHINGTON PUMP AND MACHINERY CORPORATION**

115 Broadway, New York Power & Mining Works, Cudahay, Wis  
CHICAGO OFFICE, 820 Old Colony Building

M. 439.4

For better service say "I saw it in ROCK PRODUCTS."

By the Stroh Process the parts of machinery subjected to wear are composed of Stroh Alloy. It is harder than the finest tool steel. The rest of the casting is of softer metal—all made at one pouring.



## Here's an excerpt from a letter we ran across in the files

the other morning. It's old, but that just goes to prove that Stroh Steel has been delivering the goods for a long time. We get the same kind of reports today.

"On November 15, 1912, you placed a Stroh Steel Pinion on one of our tube mills in the raw material department. From that date to the morning of December 29, 1913, the mill has run 8,277 hours, and we find on examination that the pinion is still in good condition, showing very little wear. (Signed) Chas. H. Porter, Supt., LAWRENCE PORTLAND CEMENT CO."

As we have said before: **STRONG**—where necessary; **TOUGH**—where necessary; **HARD**—where necessary.

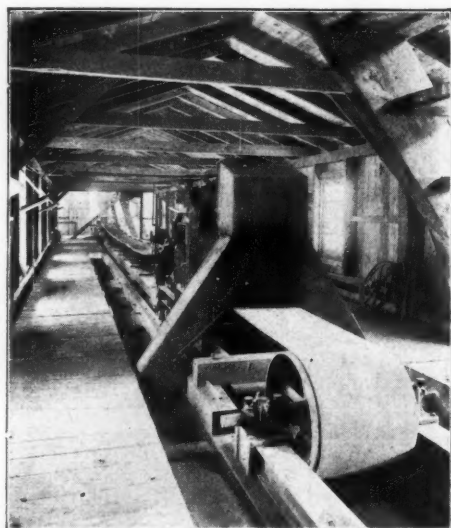
FOR DETAILS WRITE TO THE

**Stroh Steel-Hardening Process Company**  
PITTSBURGH, PA.

F. Lloyd Mark, Western Manager, Monadnock Building, Chicago.



# Stroh Steel



## WEBSTER ELEVATING, CONVEYING AND SCREENING MACHINERY

IS

### Designed and Built for SERVICE

**W**E realize that maintenance costs are heavy in handling sand, gravel, stone, lime or cement. More than forty years of experience in design and manufacture of elevators, conveyors, and screens has taught us that it pays both maker and owner to disregard first cost in favor of long life. The wise man buys equipment designed and built for hard use.

SUGGESTIONS AND ESTIMATES ON INQUIRY

## The Webster M'f'g Company

Chicago

Tiffin, Ohio

New York

(224)

Prompt attention will be given your inquiry if you mention **ROCK PRODUCTS**.





## Automatic Operation

**W**HAT does the term AUTOMATIC OPERATION convey to you? Does it indicate some useless adjunct intended to lighten your burdens but which only adds to your worries?

If this is your conception it is evident that you have not been advised of our methods of accomplishing

### Practical

### Automatic

### Operation

It is not an impossibility to have a plant that WHOLLY meets your requirements. In fact we have designed and supervised many such plants on a PRACTICAL COMMON SENSE BASIS which operate on this basis.

We are PRACTICAL specialists in AUTOMATIC OPERATIONS in HEAVY DUTY PLANTS. Our

thorough knowledge of modern conditions and equipment; ability to effect co-ordination of units with absolute flexibility in all departments; and—of **utmost importance**—our knowledge of cost where PRACTICABILITY ends and THEORY begins, enables us to differentiate between true and false economy.

WRITE US CONCERNING YOUR PROBLEMS

**THE SCHAFFER ENGINEERING AND EQUIPMENT COMPANY**

*Modern Engineering*

*Equipment Specialists*

TIFFIN, OHIO, U. S. A.

# Service

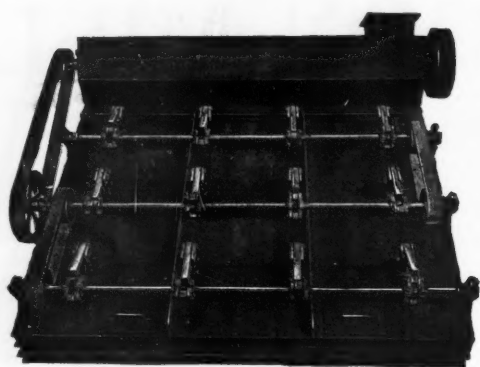
Service—that much abused but essential factor in business—receives the full value of its true definition in the way we serve our patrons.

**THE RAYMOND W. DULL CO.**

Designers and Builders of Complete Washing Plants and All Separate Units of Equipment

1914 Conway Building. CHICAGO

You will get entire satisfaction if you mention **ROCK PRODUCTS**.



PATENTED

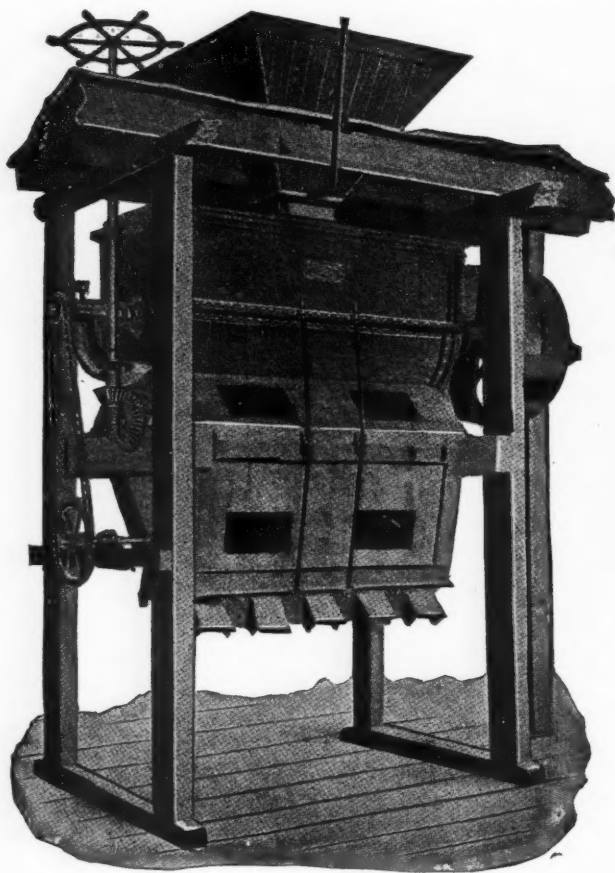
## STURTEVANT NEWAYGO SCREENS

SCREEN EVERYTHING SCREENABLE  
FROM  $\frac{1}{4}$  INCH TO 160 MESH

BUILT IN MANY SIZES AND STYLES TO SUIT  
VARYING REQUIREMENTS—MORE IN USE  
THAN ALL OTHER INCLINED VIBRATING  
SCREENS COMBINED.

**Screening Principle:**—Inclined screen surface so that by an even distribution of feed all of the screen area is in use all of the time. With a screen on a  $45^\circ$  angle a mesh twice as coarse as that of a flat screen gives the same size product. Large openings are difficult to clog and heavy gauge wire is durable. The screen cloth is stretched tight and automatically held taut so that when tapped by hundreds of little hammer blows upon its reenforced surface the wires fairly sing like a piano cord. Such efficient vibration keeps the meshes open and gives large outputs of accurately sized material. One horsepower operates the largest. Send for catalogue.

**STURTEVANT MILL COMPANY**  
**BOSTON, MASS.**



## For Dry Mixing of Plaster, Sand and Lime

**H**ERE are a few reasons why Enterprise Mixers will best suit you and your needs:

An agitator of the most efficient type keeps the material from clogging.

The mixer shaft is driven direct by a belt from the mill line shaft. No tooth-gear drive and consequently NO NOISE. The

### ENTERPRISE Noiseless Mixer

can be provided with any sized sacking spout according to the size of the bags to be used. The machine is made in two sizes: No. 1, with a capacity of 40 to 65 tons in ten hours. No. 2, capacity 80 to 100 tons.

Let us tell you all about Enterprise Mixers. You will be surprised at their many exclusive features.

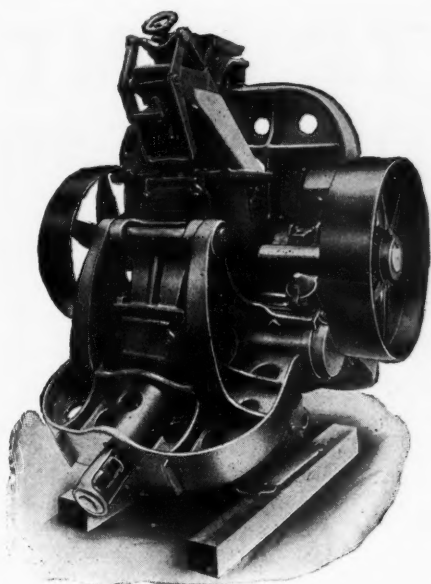
*Tell Us Your Needs!*

**THE J. B. EHRSAM & SONS MFG. COMPANY**  
ENTERPRISE, KANSAS

MANUFACTURERS OF PLASTER MILL MACHINERY, CONVEYING, ELEVATING AND POWER TRANSMISSION APPLIANCES

*It gets immediate attention if you mention ROCK PRODUCTS.*





## MAXECON MILL

### Preliminary Grinder for Tube Mills

LIMESTONE ..... 20 to 40 Mesh  
CEMENT CLINKER..... 20 to 60 Mesh

## MAXECON MILL

### PERFECTION SEPARATOR

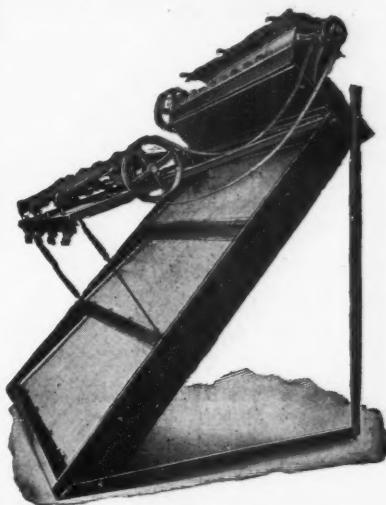
The UNIT that has LARGER  
OUTPUT with LESS POWER  
WEAR and ATTENTION than  
any other.

It will be to the interest of those who operate CEMENT  
PLANTS to know what the Maxecon Unit will do.

*Drop us a line.*

*We will be glad to tell you about it.*

**KENT MILL COMPANY**  
10 Rapelyea Street      BROOKLYN, N. Y.



**180,000  
Ton Blast**

THE record-breaking blast of the Bethlehem Mines Corporation, pictured above, was made on February 25. 52,500 pounds of powder, distributed in 60 well holes, were used. Note the uniform, fine breakage secured. 180,000 tons of rock were shattered. OF COURSE CORDEAU-BICKFORD FUSE WAS USED IN EVERY HOLE.

CORDEAU-BICKFORD adds from 10 per cent to 20 per cent to the efficiency of any explosive. Furthermore CORDEAU-BICKFORD is safe. It is insensitive to shock or friction.

**THE ENSIGN-BICKFORD CO., Simsbury, Connecticut**  
*Original Manufacturers of Safety Fuse*      ESTABLISHED 1836

*It gets immediate attention if you mention ROCK PRODUCTS.*



Bureau of American Republics, Washington, D. C.  
Steel work protected with "R. I. W." Tockolith (patented) and No. 112  
"R. I. W." Exterior walls damp-proofed with No. 232 "R. I. W."

## "R. I. W." Protects Pan-American Bureau

**T**HE cautious builder now-a-days does not think of spending a heap of money on a structure without making sure of its permanence. Permanence for steel, concrete and other building material can be assured by using



"R. I. W." Tockolith (patented) is a cement paint that liberates calcium hydrate in setting, immediately stopping incipient rust and preventing further corrosion.

No. 112 "R. I. W." Damp Resisting Paint is one of the best second coats to apply over "R. I. W." Tockolith. This makes a combination that resists chemical and electrolytic action.

No. 232 "R. I. W." Damp Resisting Paint makes the interior or exterior walls proof against dampness.

*Send for valuable literature giving full information about this line. Address Dept. 12*

### TOCH BROTHERS

Technical and Scientific Paint Makers Since 1848  
320 Fifth Avenue, New York

WORKS: New York London, Eng. Toronto, Canada



**STEEL NEED NOT RUST!  
WOOD NEED NOT ROT!  
NOR CONCRETE DUST!**

## Classified Business Directory

### BAGS AND BAG MACHINERY

Jaite Company, The

### BRICK CLAMPS

Bostwick Steel Lath Co.  
The P. D. Crane Co.

### BUCKETS, DUMPING AND GRAB

Haiss, Geo., Mfg. Co., Inc.

### CALCINING MACHINERY

Atlas Car & Mfg. Co.  
Butterworth & Lowe

### CEMENT, PORTLAND

Alpha Port. Cement Co.  
Atlas Port. Cement Co.  
Carolina Portland Cement Co.  
French, Samuel H., & Co.  
Huron Wyandotte Portland Cement Co.  
Peerless Portland Cement Co.  
Standard Portland Cement Co.  
Wolverine Portland Cement Co.

### CHAINS AND TRANSMITTING MACHINERY

Stephens-Adamson Mfg. Co.

### CONVEYORS AND ELEVATORS

Caldwell, H. W., & Son Co.  
Ehrsam, J. B., & Sons Mfg. Co.  
Good Roads Mach. Co.  
Jeffrey Mfg. Co., The  
Webster Mfg. Company  
Gifford-Wood Co.  
Stephens-Adamson Mfg. Co.  
Weller Mfg. Co.

### CRANES

#### Locomotive Gantry

Ball Engine Co.  
Byers Mach. Co., John F.  
McMyler-Interstate Co.  
Ohio Locomotive Crane Co.

### CRUSHERS AND PULVERIZERS

Allis-Chalmers Mfg. Co.  
American Pulverizer Co.  
Austin Mfg. Co.  
Bacon, Earle C.  
Bradley Pulverizer Co.  
Butterworth & Lowe  
Chalmers & Williams  
Good Roads Mach. Co.  
Gruendler Pat. Crusher & Pulverizer Co.  
Jeffrey Mfg. Co.  
K.-B. Pulverizer Co.  
Kennedy-Van Saun Mfg. & Eng. Corp.  
Kent Mill Co.  
Lewistown Foundry & Machine Co.  
McLanahan-Stone Machine Co.  
Pennsylvania Crusher Co.  
Raymond Bros. Impact Pulverizer Co.  
Stroh Steel Hardening Process Co.  
Traylor Eng. & Mfg. Co.  
Universal Crusher Co.  
Webb City & Carterville F. & M. Works.  
Williams Pat. Crusher & Pulverizer Co.  
Worthington Pump & Mach. Corp.

### DRILLS

Sanderson-Cyclone Drill Co.

### DRYERS

American Clay Mach. Co.  
Ruggles-Coles Eng. Co.

### DUST COLLECTING SYSTEMS

Clark Dust. Coll. Co.

### ENGINEERS

Bacon, Earle C., Inc.  
Fuller Engineering Co.  
Hunt, Robt. W., & Co.  
Smidth & Co., F. L.  
Schaffer Eng. & Equip. Co.

### EXCAVATORS

Ball Engine Co.  
Dull, Raymond W., Co.  
Good Roads Mach. Co.

### FUSES

Ensign-Bickford Co.

### GEARS

Caldwell, H. W., & Son Co.

### GRAVEL WASHING EQUIPMENT

Good Roads Mach. Co.

### GYPSUM-PLASTER

Best Bros. Keene's Cement Co.  
Wheeling Wall Plaster Co.

### HYDRATING MACHINERY

Kritzer Co., The  
Miscampbell, H.  
Schaffer Eng. & Equip. Co.

### INDUSTRIAL CARS

Watt Mining Car Wheel Co.

### LIME, HYDRATED

Scioto Lime & Stone Co.

### LABORATORY EQUIPMENT

Bausch & Lomb Optical Co.

### LIME KILNS

Stacy-Schmidt Mfg. Co.  
Vulcan Iron Works

### LOADERS AND UNLOADERS

Haiss Mfg. Co., Inc., Geo.  
Jeffrey Mfg. Co.  
Gifford-Wood Co.  
Stephens-Adamson Mfg. Co.  
Weller Mfg. Co.

### LOCOMOTIVES

Fate Co., J. D.  
Jeffrey Mfg. Co., The

### METAL LATH

Bostwick Steel Lath Co.  
Penn Metal Co.

### MORTAR COLORS

Chattanooga Paint Co.

### MOTORS, ELECTRIC

Gifford-Wood Co.

### MOTOR TRUCKS

Acme Motor Truck Co.  
Federal Motor Truck Co.  
Kissel Motor Car Co.  
Pierce-Arrow Motor Car Co.  
Sterling Motor Truck Co.  
White Company, The

### OIL ENGINES

Power Mfg. Co.

### PAINT AND COATINGS

Chattanooga Paint Co.  
Toch Bros.  
Williams, C. K., & Co.

### PERFORATED METALS

Chicago Perforating Co.  
Northmann-Duffke Fdy. Co.  
Johnston & Chapman Co.

### PLASTER MACHINERY

Butterworth & Lowe  
Ehrsam, J. B., & Sons Mfg. Co.

### POWER TRANSMITTING MACHINERY

Caldwell, H. W., & Son Co.  
Weller Mfg. Co.

### POWDER

Atlas Powder Co.  
Du Pont de Nemours Co., E. I.

### PULVERIZED FUEL

Locomotive Pulv. Fuel Co.

### ROAD BUILDING PREPARATIONS

Glutrin Paving Co.

### SEPARATORS

The W. S. Tyler Co.

### SCREENS

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Gifford-Wood Co.  
Good Roads Machinery Co.  
Johnston & Chapman Co.  
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Sturtevant Mill Co.  
The W. S. Tyler Co.

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Steam and Electric  
Ball Engine Co.  
The Osgood Co.

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Stroh Steel Hardening Process Co.

### TESTING SIEVES AND TESTING SIEVE SHAKERS

The W. S. Tyler Co.

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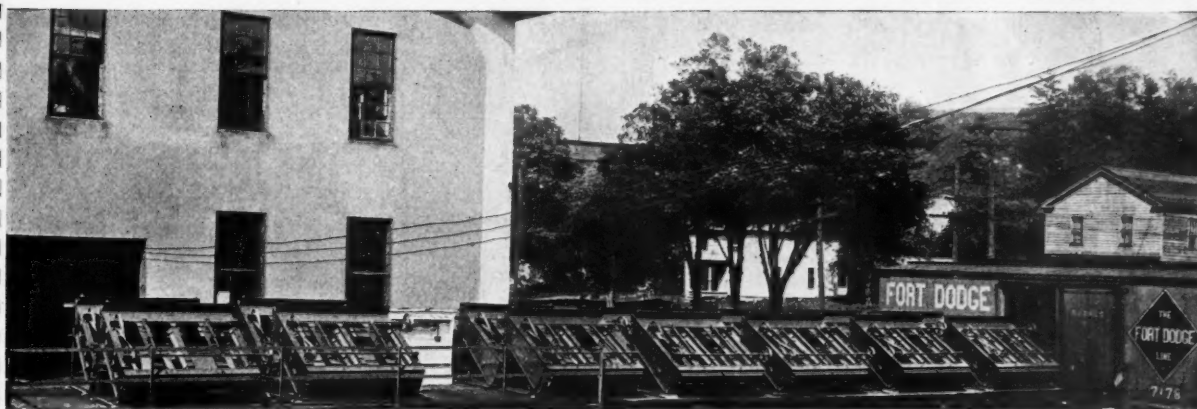
American Steel & Wire Co.  
Leschen, A., & Sons Co.

### WIRE CLOTH

Audubon Wire Cloth Co.  
The W. S. Tyler Co.

You will get entire satisfaction if you mention ROCK PRODUCTS.





## 26 WHIP-TAPS INSTALLED IN SILICA PLANT

The shipment of 14 WHIP-TAP Separators shown above, is part of an installation of 26 of these machines made by a silica company for screening silica.

Before ordering these machines, experiments were made to determine the efficiency of the WHIP-TAP as compared to other screening machinery, and it was found that in screening their product the WHIP-TAP produced a much greater tonnage and also

a much greater uniformity in the finished product. This installation of 26 WHIP-TAPS is only one of many installations where the WHIP-TAP has paid for itself in increased tonnage.

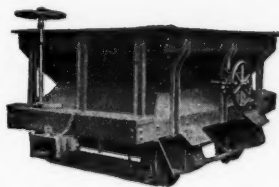
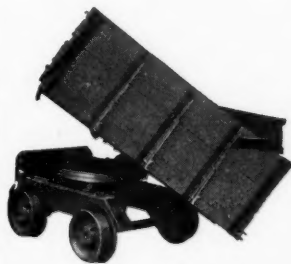
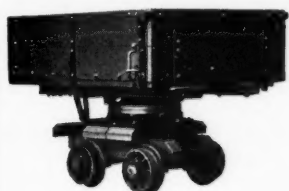
The taut WHIP-TAP screening surface at "drum-head" tension, the constant contact of the material on the screening surface, and the unchecked vibrations, will produce increased tonnage and increased profits in every industry where dry materials are screened.

WRITE FOR WHIP-TAP CATALOGUE.

# THE W. S. TYLER COMPANY

Manufacturers of TYLER "Double Crimped" Wire Cloth and Mining Screen.

CLEVELAND, OHIO



# Watt Cars

**I**F you think that there are no cars but the home-made, ice-wagon variety that will stand the "razz" of the steam shovels and the "double on brass" as they crash into one another—it's because you don't know Watt Cars. They're "the cars Watt will!"

We build cars to suit your needs and guarantee them to fill the bill. Ask any Watt owner whether his cars have lived up to expectations. At the same time, write for the Watt Booklet. It contains a whole lot of reassuring FACTS.

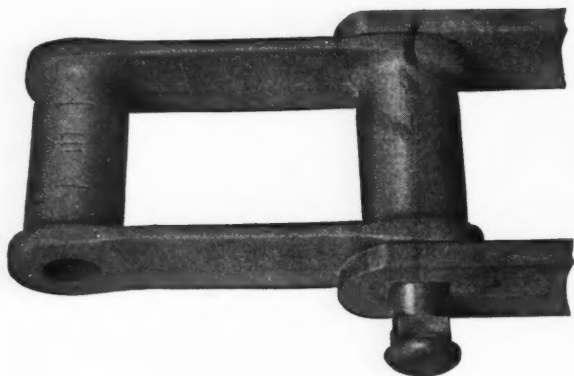
## THE WATT MINING CAR WHEEL CO.

Barnesville, Ohio.

Tell the advertiser you saw his ad in ROCK PRODUCTS. He'll appreciate it.

# JEFFREY

Square Shank Pin  
"HERCULES" Combination  
Malleable Iron & Steel Chain



**Here are some advantages of the JEFFREY Square Shank Pin Construction:**

The hard, smooth steel pins with the square shanks fit into perfectly square holes. The bearing surface is the full width of the pin. There is no rocking motion in the side bar.

The solid cast link is made of high grade malleable iron, both for strength and durability. The long barrel provides extra wearing surface on the pin and the sprocket wheel.

Steel Side Bars are of high carbon steel—and interchangeable.

The Square Shank Pins are made as rivet or coupling Pins.

Jeffrey Square Shank "Hercules" Chain is a most economical and substantial chain for service in handling gritty materials and for heavy duty Elevators and Conveyers.

Hercules Chains may be used over standard detachable chain sprocket wheels as follows:

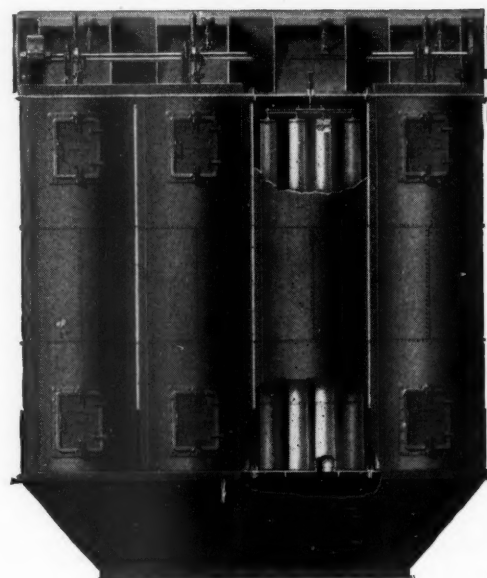
102-B on 95-J	133 on 122
111 on 108	188 on 88
131 on 103	

We are the originators of this type of chain and have been building and improving it for 25 years. Write for Chain Catalog 211-M.

**THE JEFFREY MFG. CO.**

935 North Fourth Street Columbus, Ohio

## THE ALLIS-CHALMERS DUST COLLECTOR



Patented

**DUST** increases the wear and tear on machinery.

**DUST** reduces the efficiency of your plant.

**DUST** is the origin of disease.

**DUST** is the cause of labor difficulties.

**ALLIS-CHALMERS  
MFG. COMPANY**

CRUSHING, GRINDING  
AND  
CEMENT MFG. MACHINERY

MILWAUKEE, WISCONSIN

Offices in All Principal Cities



## Here Is What One of Our Customers Says About the

# Raymond Pulverizing Air-Separating System

"Having found solution to three of our crushing problems in the RAYMOND Mill, we now wish to have your recommendations regarding the pulverizing of another product manufactured by us."

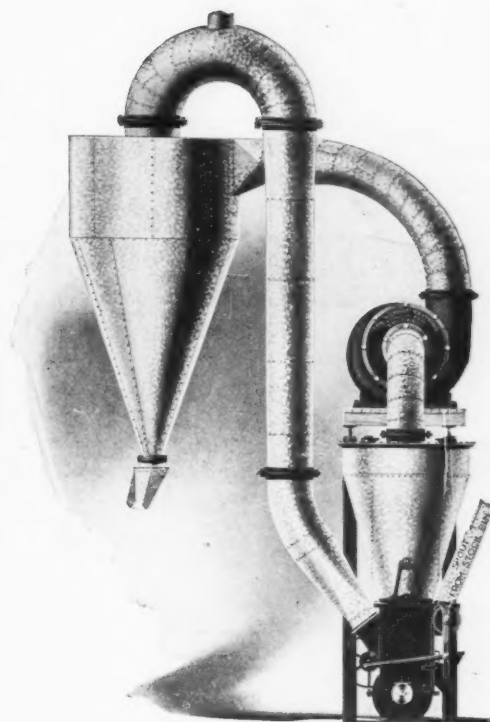
This is only one of a hundred satisfied customers who have found the solution of their fine grinding problems in the RAYMOND System.

We can solve your difficult pulverizing propositions just as satisfactorily whether it is the grinding of such materials as coal, gypsum, hydrated lime, or any other material which has to be reduced to a fine powder.

Please remember that we do not merely say our mills will do the work but we guarantee their performance.

SEND FOR No. 12 CATALOGUE TODAY

**RAYMOND BROS. IMPACT PULVERIZING COMPANY**  
1301 North Branch Street CHICAGO, ILL.



## To Determine Carbonates —a New Method

The percentage of carbonates in limestone, fertilizers, baking powders and other materials can be determined ACCURATELY and QUICKLY with the

### Barker Carbonate Apparatus

Any unskilled user can obtain results by this method that compare favorably with those of a skilled chemist using standard laboratory methods.

Apparatus is a hydrometer containing the sample, to which HCL is added. Decrease in weight accompanying consequent release of CO<sub>2</sub> is recorded on a scale as "percentage of carbonates" from which the gas escaped. No chemical balance required, and no long calculations to be made.

Designed by J. F. Barker, M. S., specialist in soils, Ohio State University, College of Agriculture, who personally tests and certifies each instrument before it is shipped to user.

Write for descriptive circular.

**Bausch & Lomb Optical Co.**

200 St. Paul St., Rochester, N. Y.

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Manufacturers of Microscopes, Projection Apparatus (Balopticons), Photographic Lenses, Precision Glassware and other High Grade Optical and Laboratory Equipment.



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It is of more importance to you Wire Rope users to know what kind of rope will give you the best results than to know the reasons for its superior service.

We are glad to let HERCULES (Red Strand) Wire Rope demonstrate its ability. Why not place a trial order? Many other Wire Rope users have done so, and are now using it exclusively to their profit.

Inquiries appreciated

**A. Leschen & Sons Rope Co.**  
St. Louis, Mo.

New York. Chicago, Denver Salt Lake City San Francisco

For better service say "I saw it in ROCK PRODUCTS."



- ¶ May 20th to May 27th is RED CROSS WEEK.
- ¶ And you are going to be asked to give freely.
- ¶ And of course you will give freely, because you are a good American and desirous of playing a white man's part in the big war that will make the world free.
- ¶ Of course you bought freely of the Third Liberty Loan, but that was not a gift; it was an investment in the world's best security netting you  $4\frac{1}{4}$  per cent.
- ¶ The RED CROSS fund is different. It is just a plain *gift* when you do your RED CROSS bit. A gift to help take care of our boys at the front, to carry them off the field when wounded, to bind their hurts, to save their lives. And you would be ashamed to be a slacker on that issue, that is certain.
- ¶ The Liberty Loan was an appeal to your patriotism and your purse.
- ¶ The RED CROSS is an appeal to your purse and your *heart!*
- ¶ Give generously, give cheerfully to the RED CROSS. Give till it pinches; and every dollar you give in money will make yourself richer in spirit by a hundred times.